

REPORTER'S RECORD  
VOLUME 2 OF 5 VOLUMES  
SOAH DOCKET NO. 582-05-1552  
TCEQ DOCKET NOS. 1997-1063-UIC and 2004-0746-UIC

APPLICATIONS OF URI, INC.	* BEFORE THE STATE OFFICE
TO	*
THE TEXAS COMMISSION ON	*
ENVIRONMENTAL QUALITY	*
	*
FOR	*
	*
ISSUANCE OF A PRODUCTION	*
AREA AUTHORIZATION FOR	* OF
PRODUCTION AREA 3	*
UNDER TCEQ PERMIT URO2827	*
	*
AND	*
	*
RENEWAL OF TCEQ WASTE	*
DISPOSAL WELL PERMIT	*
NOS. WDW-247 AND WDW-248	* ADMINISTRATIVE HEARING

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HEARING ON MERITS

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On the 2nd day of August, 2005, the following proceedings came on to be heard in the above-entitled and numbered cause before the Honorable Paul Keeper, Judge presiding, held in Kingsville, Kleberg County, Texas:

Proceedings reported by machine shorthand.

BOSCAMP & ASSOCIATES (361) 364-0600

## A P P E A R A N C E S

Mr. Jep Hill  
LAW OFFICE OF JEP HILL  
P.O. Box 30254  
Austin, Texas 78755  
(512) 342-8888  
ATTORNEY FOR APPLICANT

Mr. Don Redmond  
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY  
OFFICE OF LEGAL SERVICES  
12100 Park 35 Circle, Building A  
Austin, Texas 78753  
(512) 239-0612  
ATTORNEY FOR THE EXECUTIVE DIRECTOR OF THE TCEQ

Ms. Christina Mann  
TEXAS COMMISSION OF ENVIRONMENTAL QUALITY  
OFFICE OF PUBLIC INTEREST COUNSEL  
12100 Park 35 Circle, Building F  
Austin, Texas 78753  
(512) 239-4014

Ms. Anne Rowland,  
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY  
OFFICE OF PUBLIC INTEREST COUNSEL  
12100 Park 35 Circle, Building F  
Austin, Texas 78753  
Telephone (512) 239-6376  
ATTORNEYS FOR OFFICE OF PUBLIC INTEREST COUNSEL

Ms. Melanie Oberlin  
HENRY & POPLIN  
B 19 1/2 West 11th Street  
Austin, TX 78701  
(512) 708-1549  
ATTORNEY FOR PROTESTANT SOUTH TEXAS OPPOSES  
POLLUTION

1 Mr. Enrique Valdivia  
TEXAS RIO GRANDE LEGAL AID, INC.  
2 1111 North Main Avenue  
San Antonio, Texas 78212  
3 (512) 212-3700  
ATTORNEY FOR PROTESTANT, HERMILA GARCIA

I N D E X  
VOLUME 2  
HEARING ON MERITS

August 2, 2005

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PROTESTANT'S

NO.	DESCRIPTION	OFFERED	ADMITTED
2	Sample location map		14

URI'S

NO.	DESCRIPTION	OFFERED	ADMITTED
41A	Landscape version		168

1 (Proceedings commenced at 9:45 a.m.)

2 THE COURT: Today is Tuesday, August  
3 the 2nd. It's approximately 9:45 a.m. We're  
4 reconvening day two of our hearing.

5 When we stopped last, Mr. Valdivia was  
6 cross-examining the witness, Mr. Pelizza. Are there  
7 any preliminary matters any counsel need to address  
8 before we begin? Sounds as though the answer is no.

9 So Mr. Valdivia, if you're ready to begin.

10 MR. HILL: Can we take a minute? We're  
11 trying to straighten out exhibits.

12 THE COURT: All right. Why don't we  
13 just hold on for just a second.

14 (Off the record.)

15 THE COURT: Please proceed.

16 MARK S. PELIZZA, P.G.  
17 having been previously duly sworn, testified as  
18 follows:

19 CONTINUED CROSS-EXAMINATION

20 BY MR. VALDIVIA:

21 Q. Good morning, Mr. Pelizza.

22 A. Good morning.

23 Q. Before I get into my questions, and you may  
24 recall yesterday, we had trouble kind of talking over  
25 each other. And we agreed to let me -- even though I

1 talk slowly -- let me finish my question before you  
2 answer?

3 A. Certainly.

4 Q. And also, I think we have a new court  
5 reporter today, and -- and she may not be as good at  
6 hearing what you have to say as the one yesterday, so  
7 could you, please, speak up so that she can clearly --  
8 we got a microphone.

9 A. Okay.

10 Q. Thank you. At the close of the questioning  
11 yesterday, I was asking you a few questions about the  
12 waste disposal wells, the injection wells. So I want  
13 to continue on in that vein.

14 Regarding waste disposal well 248, does  
15 URI dispose of any waste from any other county at  
16 waste disposal well 248?

17 A. No.

18 Q. What is the capacity of the proposed waste  
19 disposal well 247?

20 A. 247 and 248 have, essentially, identical  
21 individual capacities, yet, they've got a cumulative  
22 capacity, which -- in other words, if -- if both of  
23 the wells were drilled at the same time, the  
24 cumulative capacity would be the same as the  
25 individual capacity of either well.

1 Q. Okay. And yesterday, I believe, you  
2 testified as to the capacity of waste disposal well  
3 248?

4 A. Uh-hum.

5 Q. And gallons per minute?

6 A. Yes.

7 Q. What was that capacity?

8 A. I believe it's got a instantaneous capacity  
9 of -- to the best of my recollection, it's 200 gallons  
10 a minute on instantaneous capacity. And it's got an  
11 annual cumulative capacity that -- wait a minute. Let  
12 me back up.

13 I'd like to look at the permit to get  
14 the exact numbers of the cumulative capacity.

15 Q. Of the -- the cumulative capacity?

16 A. I don't know the -- the number off the top  
17 of my head. It equates to, approximately, 200 gallons  
18 a minute over the course of a year, if we were to go  
19 through the math.

20 Q. And so your testimony was with respect to  
21 waste disposal well 247, that it would have,  
22 basically, the same capacity?

23 A. If it was operated by itself.

24 Q. And is -- is that -- are you planning to  
25 operate it by itself?

1           A.       247 is permitted as a back-up to 248 in the  
2 event that there's a mechanical problem with 248, or  
3 vice-versa. It's -- it's intended to be a back-up.  
4 This -- this was a provision that was incorporated  
5 into the permit hearing some years ago as a -- as a  
6 safety net to have a second well as a back-up in case  
7 there was a -- a mechanical problem.

8                       248 has operated since its commission  
9 without any issues or problems, so we've never seen a  
10 need or even had to consider drilling the back-up  
11 well.

12          Q.       With respect to restoration, --

13          A.       Yes.

14          Q.       -- what percentage of the treated fluids is  
15 reject water?

16          A.       In other words?

17          Q.       When you treat the water, --

18          A.       Yes.

19          Q.       -- how much of it --

20          A.       From the reverse osmosis unit?

21          Q.       Yes.

22          A.       It -- it -- it's somewhat variable, but  
23 where we're operating right now, approximately  
24 one-quarter of the water is reject water, and  
25 three-quarters of the water would be product water.



1 That would be variable, again, depending on -- on the  
2 efficiency that the unit is running at any particular  
3 point in time. I would give a range and say that  
4 product runs between two-thirds and three-quarters,  
5 and reject ranges between one-quarter and one-third.

6 Q. Okay. So in other words, putting it into  
7 percentages, which I think was my question, the reject  
8 rate is roughly in a range between 25 and 33 1/3  
9 percent?

10 A. Yes.

11 Q. Okay. And if you know, how many gallons  
12 per year are you committed to treating?

13 A. I -- I believe the number is 240 million  
14 gallons per year.

15 Q. 230 million?

16 A. I think it's 240 million gallons a year.

17 Q. 240 million. Okay. So can you give me an  
18 estimate of how much -- how many gallons per year is  
19 -- of that is reject water?

20 A. I could -- I could calculate it.

21 Q. Do you have a calculator with you?

22 A. With the assumption that it's at 25  
23 percent, that would be 600,000 gallons a year -- or 6  
24 million -- that's not right. This calculator doesn't  
25 go far enough. I have a calculator I can use in my

1     briefcase.

2                   MR. VALDIVIA:   Your Honor, are you  
3     offering up a calculator?

4           A.     If we're doing calculations, I'd prefer to  
5     use the calculator that's in my briefcase, if that's  
6     okay.

7                   That would be 60 million gallons a  
8     year.

9     BY MR. VALDIVIA:

10           Q.     Okay.   And at the -- the one-third rate,  
11     rejection rate?

12           A.     It would be 79,200,000 gallons a year.

13                   MR. VALDIVIA:   May I approach the  
14     witness?

15                   THE COURT:   Yes.

16     BY MR. VALDIVIA:

17           Q.     At the close -- excuse me, sir.

18                   At the close of your testimony  
19     yesterday, you were looking at a map, which we've -- a  
20     copy of which is marked as Protestant Exhibit 2.

21           A.     It is.

22           Q.     Could you identify that for me, please?

23           A.     This is entitled a sample location map. It  
24     shows the location from our operations plan where we  
25     obtained samples from various environmental media.

1           Q.       And that is a map that you were referring  
2 to yesterday to identify two wells which you believe  
3 were within a quarter mile of a Class I or Class III  
4 rejection wells?

5           A.       Yes.

6                   MR. VALDIVIA: I'd like to offer this  
7 Exhibit 2 into evidence.

8           THE COURT: Any objection?

9           MR. HILL: Offering it into evidence  
10 for all purposes whatsoever, or to demonstrate what --  
11 that he's referred to it? I don't know.

12                  MR. VALDIVIA: To demonstrate that --  
13 that he's referred to it, and that -- that these are  
14 the wells that are within a quarter mile of Class I or  
15 Class III URI wells.

16                  MR. HILL: I -- I don't understand that  
17 that was his testimony, and I don't understand that  
18 this map is, you know -- does more than identify there  
19 are some wells relative to a marked off area. So I  
20 don't -- I've got a problem, and I don't know what  
21 this -- what this -- if this is offered to illustrate  
22 something besides the fact that Mr. Pelizza referred  
23 to it. I'm not sure what...

24                  THE COURT: Is the word "relevance"  
25 about to be said?

1 MR. HILL: My question is, I -- I don't  
2 see a complete offer yet. It's offered for all  
3 purposes? If so, I object that it's not qualified on  
4 that basis. I don't see that it's necessarily to  
5 scale. It's been photocopied.

6 THE COURT: Mr. Valdivia, for what  
7 purpose are you offering the exhibit?

8 MR. VALDIVIA: To establish that there  
9 are some groundwater wells within a quarter mile of  
10 URI's Class I or Class III wells.

11 MR. HILL: I don't think we --

12 MR. VALDIVIA: Simply for that purpose.

13 MR. HILL: I don't think we have  
14 testimony that says that they -- that there are wells  
15 within a quarter mile. I think there is testimony  
16 made today that they may be and it's a question of  
17 measuring. And this map identifies some various  
18 spots as WW-1 or R-13, and WW-5 or 34, and so I don't  
19 know.

20 We may remember what was said  
21 yesterday, but when we read this record in three weeks  
22 or a month, we may wonder what it was that was said.  
23 And I -- I suggest to you that it is not at all clear  
24 what's been shown so far.

25 This map he's referred to, I have no

1 objection to identifying it, but that it establishes  
2 anything, I object.

3 THE COURT: Okay. Anything further?  
4 Oh, excuse me. Staff?

5 MR. REDMOND: We have no objections,  
6 Your Honor.

7 THE COURT: Okay.

8 MS. ROWLAND: We -- we have no  
9 objections to offer. Maybe a little bit more  
10 explanation of what he's offering it for, where the  
11 wells are, having identified them on the map, it might  
12 be of use to -- to everyone.

13 THE COURT: Okay. Well, as -- as I  
14 recall, those wells were identified on the map  
15 yesterday, and the -- and the names of the owners,  
16 Mr. Pelizza was able to provide us also yesterday.

17 I -- Mr. -- Mr. Valdivia, do you have  
18 anything else that you would like to provide us with  
19 in terms of an explanation of the basis for your  
20 offer?

21 MR. VALDIVIA: Basically, I'd asked the  
22 question about wells within a quarter mile and certain  
23 other wells. And Mr. Pelizza said he thought there  
24 were some and he referred to this map and he testified  
25 with reference to the map and identified the wells

1     that -- that might be within a quarter mile. And I  
2     simply wanted this in the record so we'd be clear  
3     about what he was talking about.

4                 THE COURT: Protestant's Exhibit Number  
5     2 is admitted. So you may proceed.

6                 MR. HILL: Your Honor, may I have a  
7     clarification? Was it admitted for the purpose of  
8     identifying what the witness referred to yesterday  
9     when he testified? Okay. If that's the -- I have no  
10    objection to that.

11                THE COURT: Yes.

12                MR. HILL: If it was object -- offered  
13    for any other purpose, to prove that the distance was,  
14    in fact, a quarter of a mile or the scale was  
15    accurate, I have problems because I don't believe  
16    there's any ground at this point to believe that the  
17    scale is accurate once it's been reduced, yet, another  
18    time, and it's produced on paper, and the distances  
19    are rather small for the scale of the map.

20                THE COURT: All right. Well, as I  
21    recall, this document was taken from URI's application  
22    for the original permit; is that correct,  
23    Mr. Valdivia? Is that -- is that what you told us  
24    yesterday?

25                MR. VALDIVIA: I'm -- I'm not sure that

1 was in the -- if that -- if we did have that  
2 discussion, that testimony, yesterday as well, I don't  
3 recall if that's the case or not. I would ask the  
4 witness.

5 MR. HILL: Even if it were, Your Honor,  
6 the problem would be that if it were offered -- if it  
7 were offered to prove the distances independently of  
8 the witness's testimony, I submit this map is of  
9 insufficient scale and size to allow for an accurate  
10 representation of distance.

11 It may have been included in an  
12 application, if so, it was illustrative of other  
13 matters, which this does not address. And I don't  
14 know that it was offered for the purpose of proving  
15 any distance or that it -- by the time it's been  
16 reproduced as many times as it has now, it is even  
17 accurate for use for scaling.

18 So I -- I have no problem with the fact  
19 that he referred to it and it refreshed his  
20 recollection of something, but I do have a problem of  
21 it -- with it as independent proof of the special  
22 relationships.

23 THE COURT: Okay. So -- so  
24 Mr. Valdivia, do you have a response?

25 MR. VALDIVIA: I was really relying on

1 this witness's testimony, and I want the exhibit in  
2 the record for clarity sake.

3 THE COURT: Okay. So the admit -- the  
4 -- the exhibit is admitted for clarity sake. And if  
5 the witness has any additional information that he can  
6 provide to us about the information that is on the  
7 exhibit, he's certainly free to.

8 If you wish to provide us with another  
9 exhibit that provides more accurate or specific or  
10 timely information regarding the license area, you're  
11 welcome to do that as well.

12 BY MR. VALDIVIA:

13 Q. Mr. Pelizza, Protestant's Exhibit 2, which  
14 has just been admitted into evidence, could you, for  
15 the record, please, state where -- what this exhibit  
16 -- where it comes from, where you got this from?

17 A. I lifted this from our operations plan,  
18 which is a sample location map.

19 Q. Okay. And could you explain a little  
20 bit -- in a little bit more detail what the document  
21 is that you got this map from?

22 A. URI operates under a standard operations  
23 plan. This plan, essentially, contains a overview on  
24 our -- our -- on applying procedures for a host of  
25 different activities, which are part of day-to-day



1 operations. And it's followed by a set of standard  
2 procedures, some hundred standard procedures that  
3 encompass many, many, many different types of things  
4 that -- that each one of the employees do in -- in the  
5 day-to-day operations of our facilities. And this map  
6 is a map which would instruct a technician or a  
7 environmental person on where to take samples.

8 Q. Do you have any reason to doubt the  
9 accuracy of this map?

10 A. For the purpose of showing where samples  
11 ought to be taken, this map is accurate.

12 Q. Okay. Yesterday you referred to this map  
13 to give your estimate of the location of certain  
14 wells, groundwater wells, to Class I and III wells of  
15 URI; is that right?

16 A. Yes.

17 Q. And it's your testimony that this map is  
18 sufficiently accurate for you to make that  
19 determination?

20 A. Since asking me this, I've reviewed this  
21 map, and I -- I see a couple of problems with regard  
22 to that specific of a testimony.

23 First, I would note that while this map  
24 shows sample locations, it does not show any well  
25 fields or wells. So therefore, to make a direct

1 measurement, you know, I couldn't do that from this  
2 map. I would note that a quarter mile is 1,320 feet.  
3 And as such, it's very likely that -- that -- that  
4 certainly WW-5 that I mentioned yesterday, and  
5 probably WW-8 that I mentioned yesterday, is more than  
6 1,320 feet.

7                   You know, all of these wells fall  
8 outside the license area boundary, and looking at the  
9 scale -- and -- and it could be stretched -- and  
10 looking at where these wells are, I would have to have  
11 a more detailed map to say that -- that either of  
12 those is or isn't more or less than 1,320 feet from  
13 the closest injection well.

14                   What the map does show is all of these  
15 wells are outside the area that has been permitted in  
16 the -- in the area permit and exempted as the exempted  
17 area and they are outside. And they are also a large,  
18 large distance from PAA3.

19           Q.       All right. Thank you. And yesterday we  
20 talked some about -- and we'll go back to the  
21 production area issues for a moment. Yesterday we  
22 discussed pressure testing, monitoring wells as a  
23 means to assure that the well is -- has integrity. Do  
24 you recall that testimony?

25           A.       Yes.

1           Q.       Okay. Do you perform a single point  
2 resistivity survey in conjunction with that?

3           A.       No.

4           Q.       You do not?

5           A.       (Shakes head.)

6           Q.       And that's required by Rule 331.82; is that  
7 right?

8           A.       We believe that resistivity surveys and  
9 pressure tests are redundant. Our experience with --  
10 with single point resistivity surveys is they're very  
11 inaccurate and misleading. And the pressure test is,  
12 and has been, for our procedure for demonstrating  
13 mechanical integrity, it's a direct test, and we find  
14 it -- it is just more accurate.

15          Q.       Okay. But my question was as to the  
16 regulation, 331.82. Is that -- is it not true that  
17 the reg requires --

18          A.       It's our interpretation --

19                   THE COURT: Let him finish. Go ahead.

20 BY MR. VALDIVIA:

21          Q.       Is it not true that the regulation requires  
22 single point resistivity surveys?

23          A.       My reading of that regulation is that we  
24 have the latitude to run either a single point  
25 resistivity survey or a pressure test.

1           Q.       Okay.  If -- is it your testimony that the  
2 pressure test by itself is sufficient under the  
3 regulations?

4           A.       My testimony is that the pressure test  
5 demonstrates mechanical integrity pursuant to the  
6 requirement of the regulation.

7           Q.       And there is no other process or survey  
8 that you utilize to take the place of the single point  
9 resistivity survey?

10          A.       We use a pressure test to take the place of  
11 the -- a single point resistivity survey is designed  
12 to show breaks in the casing, as is a pressure test is  
13 designed to show breaks in the casing.

14                   A single point resistivity survey is --  
15 provides ambiguous results and has been largely and --  
16 and universally in the case of our company and every  
17 other example that I know of, eliminated as a means of  
18 demonstrating mechanical integrity.  It's an ambiguous  
19 test, it gives false results.

20                   Pressure testing is a positive test  
21 that gives guaranteed results, and it is the means of  
22 testing that we adopted.  And -- and myself and -- and  
23 professional engineers with our firm believe it is the  
24 superior test for demonstrating that there are no  
25 leaks in the casing.

1           Q.       Okay. Yesterday you talked about the pump  
2 test. The pump test is a separate different process  
3 for a different purpose, I understand that. And isn't  
4 it right that the pump test is what you utilize to  
5 assure containment in the production zone?

6           A.       Yes. I -- I described pump test for that  
7 purpose yesterday.

8           Q.       Okay. Now, isn't the purpose of the pump  
9 test to check for leaky conditions?

10          A.       Yes. That is one of the -- the purposes of  
11 the pump test that I described yesterday.

12          Q.       Okay. And is it your testimony that URI  
13 performs its pump test in a manner that assures  
14 checking for -- for leak -- leaky conditions?

15          A.       Yes.

16          Q.       So for example, the guidance on the TCEQ  
17 guidance on pump testing, it is your testimony that  
18 URI follows that guidance?

19          A.       I don't think I ever said that URI follows  
20 every aspect of TCEQ guidance. I think I said that  
21 the purpose of pump tests was to determine if there's  
22 leakings overlying zones and to determine the  
23 communication with the ring of monitor wells.

24          Q.       So is it your testimony, then, that it is  
25 not necessary for URI to follow the guidance with

1 respect to pump tests?

2 A. I don't think I said that either. I said  
3 that URI, in our applications, specifies the  
4 components of pump tests in our base permit  
5 applications and those are the procedures that we  
6 follow.

7 Q. Okay. I don't think you answered my  
8 question. Are the procedures you follow that you just  
9 testified to, are they different from the procedures  
10 in the guidance?

11 MR. HILL: Objection. Asked and  
12 answered.

13 MR. VALDIVIA: I -- I asked the  
14 question because I don't think he answered my original  
15 question.

16 THE COURT: I'll overrule your  
17 objection, and at the risk of burdening the record  
18 with the same answer, ask the witness to restate his  
19 answer.

20 A. Could you restate the question, please?

21 MR. VALDIVIA: Could you read it back  
22 for me, please?

23 (Pending question read.)

24 A. Without specifying what guidance you're  
25 referring to, I can only speculate. But our pump

1 tests are conducted in a way that has been outlined in  
2 our base permit applications.

3 They are conducted to achieve the --  
4 the goals that I specified yesterday. And I know of  
5 nothing else in any guidance that is lacking in our  
6 pump tests that we don't do that wouldn't demonstrate,  
7 A, that -- that we -- the lack of leakings from  
8 underlying zones, or, B, the communication of the  
9 monitor well ring. You know, there -- there are many  
10 tests that can be run, but we consider those  
11 superfluous to what our business is all about.

12 BY MR. VALDIVIA:

13 Q. Okay. I want to go back to the map that's  
14 been marked as Protestant's Exhibit Number 1. And  
15 yesterday --

16 MR. VALDIVIA: If I may approach the  
17 witness.

18 THE COURT: Yes.

19 BY MR. VALDIVIA:

20 Q. Yesterday I had you measure the distance  
21 between the area that has the injection extraction  
22 wells at that production area and the monitoring well  
23 rings.

24 I'm going to ask you to approach that  
25 map. I'm going to give you -- I'm going to use -- I'm

1 not sure if this -- use that pen and draw a line  
2 between the production area and the monitoring well  
3 ring on the north end as you did yesterday.

4 A. In other words, an arrow?

5 Q. Yes.

6 A. You mean just a line?

7 Q. Yes.

8 A. (Witness complied.)

9 Q. All right. Could you try and make it a  
10 little more clear, please?

11 A. (Witness complied.)

12 Q. Thank you. And it was your testimony  
13 yesterday that that was about 400 feet?

14 A. Yes.

15 Q. Could you, with the black pen, mark 400  
16 feet?

17 A. (Witness complied.)

18 Q. Okay. And you measured the distance below  
19 that area to the southern monitor well ring. Do you  
20 recall that testimony?

21 A. Yes.

22 Q. Could you draw a line to correspond to that  
23 measurement?

24 A. (Witness complied.)

25 Q. And try to make it a little bit darker if



1     you would, please.

2           A.     (Witness complied.)

3           Q.     Okay. And it was your testimony yesterday  
4     that that was approximately 1,000 feet; is that  
5     correct?

6           A.     Yes.

7           Q.     Go ahead and mark that.

8           A.     (Witness complied.)

9           Q.     Thank you. Okay. You can keep those. I'm  
10    going to -- you can be seated. I'm going to ask you a  
11    couple more questions.

12          A.     This will dry out unless you put the cap  
13    on.

14          Q.     Okay.

15          A.     It's already dried up.

16          Q.     All right. Now, on this map, are you able  
17    to determine where the permit boundary is?

18          A.     All of the permit boundary is not on that  
19    map, but I can identify what portions of the permit  
20    boundary that surround PAA3 are on that map.

21          Q.     Okay. Well, my question was: On that map,  
22    is there any indication of the permit boundary?

23          A.     I know where the permit boundary is on that  
24    map, yes.

25          Q.     But is there an indication on that map of

1 the permit boundary?

2 A. You cannot -- you would have to lay that  
3 map next to another map in the application to be able  
4 to see where the permit boundary is because that is a  
5 subset of the map that includes the whole permit  
6 boundary.

7 Q. Okay. Are you familiar with the 100-foot  
8 rule with respect to a permit boundary?

9 A. By a hundred, could you explain a little  
10 bit more?

11 Q. I'm referring to 331.82(g), I believe. And  
12 it requires that wells be located at least a hundred  
13 feet inside the permit boundary?

14 A. Yes.

15 Q. And could you explain further what -- what  
16 that rule requires?

17 A. That is a rule that requires that monitor  
18 wells be located 100 feet within the permit  
19 boundary.

20 Q. Okay. And on that map, that's not possible  
21 to determine that; is that correct?

22 A. It's possible for me. I can look at that  
23 map and determine what wells are 100 feet within the  
24 permit boundary, yes.

25 Q. Okay. But somebody who did not have your

1 knowledge or background of the site would not be able  
2 to determine that, would they?

3 A. I would say that -- that anyone who wanted  
4 to look at the maps that are within our production  
5 area authorization and understands how to read two  
6 separate maps of two different scales could come to  
7 that conclusion, that had technical expertise in  
8 reading maps.

9 Q. Are you familiar with the 50-foot rule  
10 regarding nonproduction zone wells?

11 A. No.

12 Q. And I'd direct your attention to regulation  
13 331.103(b), which states that nonproduction zone wells  
14 shall be located not more than 50 feet on either side  
15 of a line through the center of the production area.

16 A. You refreshed me. Now I remember.

17 Q. Could you tell us what your understanding  
18 of that rule requirement is?

19 A. My understanding is, is that's -- that is  
20 designed to have nonproduction wells approximately on  
21 the axis of a production area.

22 Q. Okay. And in order to determine that, you  
23 have to have a line through the center of the  
24 production area; is that right?

25 A. Or the approximate production area.

1 Q. Okay. Can you do that for me on this map  
2 that's marked as Exhibit 1?

3 A. I can draw -- I can show a line, generally,  
4 where the mineralized fairways are on that map, but it  
5 -- yes, I can draw a line approximately where the  
6 mineralized fairways are on this map.

7 Q. Okay. Would you do that for me, please,  
8 with a blue pen?

9 A. (Witness complied.)

10 Q. Okay. And using the black pen, could you  
11 mark next to one of your blue hatchmarks -- what  
12 should we call that, the center -- P -- center, PA  
13 center, how's that -- next to one of the blue marks.

14 A. No, it's not PAA center. I would say it's  
15 the two mineralized zones.

16 Q. Okay. Okay. MZ center.

17 A. (Witness complied.)

18 Q. Thank you. So under this rule, you are --  
19 you may sit down -- sorry.

20 The rule requires that nonproduction  
21 wells be within 50 feet of the blue hatchmarks that  
22 you've marked on Exhibit 1; is that correct?

23 A. That is correct.

24 Q. Now, looking at those marks, would you say  
25 that URI's in compliance with that requirement?

1 A. Yes.

2 Q. Could you explain your answer?

3 A. Well, as you can see that -- that the  
4 predominant density of our overlying zones runs along  
5 the spine of that -- of that line. (Indicating.) In  
6 other words, if -- if you -- you follow that line and  
7 look at where the majority of the overlying and  
8 underlying and -- and baseline wells are, they fall  
9 along that line.

10 MR. HILL: Excuse me, Your Honor, the  
11 witness is speaking of "that line" and we've got --

12 A. Of the MZ center lines.

13 BY MR. VALDIVIA:

14 Q. So it's your testimony that you're in  
15 compliance and -- withdraw the question.

16 Okay. Now, yesterday you testified --  
17 we talked about the monitoring well ring, and I had  
18 you mark a 400 and a thousand foot gap just now. Is  
19 there any reason why you did not make a ring around  
20 the present area that you have as a production area?

21 A. It's because we, in delineating and -- and  
22 to the extent that we have the score delineated, we  
23 have determined that this is the optimum mine unit for  
24 production area number three.

25 Q. Okay. Now, yesterday I was trying to get

1 at possible changes to the production area that URI  
2 had made, and perhaps I was using the wrong  
3 terminology. Has the mine area -- is this mine area,  
4 that is the area that's circled by the monitoring well  
5 ring, has that changed in any way? Did URI change  
6 this proposal in any way?

7 MR. HILL: Asked and answered  
8 yesterday.

9 THE COURT: All right. This is the --  
10 the identical --

11 MR. HILL: Objection --

12 THE COURT: Hold on a second. I -- I  
13 frankly don't recall from yesterday, so the witness  
14 can respond.

15 A. This production area number three has not  
16 changed at all.

17 BY MR. VALDIVIA:

18 Q. Okay. I think you testified yesterday that  
19 the general flow of groundwater is northwest; is that  
20 correct?

21 A. The general flow of groundwater is  
22 northwest, yes.

23 Q. Okay. Could you mark that, say, in the  
24 center between the two blue lines, an arrow that would  
25 indicate northwest flow?

1 A. (Witness complied.)

2 Q. And just put "groundwater flow" next to  
3 that arrow.

4 A. (Witness complied.)

5 Q. Now, while you're up there, are you  
6 familiar with the Garcia Hill area?

7 A. I am. Uh-hum.

8 Q. Are you able to identify the location of  
9 Garcia Hill on that map?

10 A. I believe it's off the map, but it would be  
11 up where that light is.

12 Q. Okay.

13 THE COURT: So further northwest?

14 A. Yes.

15 BY MR. VALDIVIA:

16 Q. Could you indicate along the border where  
17 you think Garcia Hill would be?

18 A. (Witness complied.) And it's further than  
19 that, but it's in -- it's out in here, if that helps  
20 (Indicating).

21 Q. I understand.

22 MR. HILL: Objection, Your Honor. We  
23 can't make a record with "out in here."

24 THE COURT: The witness is referring to  
25 the upper left-hand corner of the map, the furthest

1 northwest point on the map.

2 BY MR. VALDIVIA:

3 Q. If it will help, you could lower the board  
4 and just write "Garcia Hill" where --

5 MR. HILL: Your Honor, excuse me, all  
6 right?

7 THE COURT: We -- we can --

8 MR. HILL: I object that the -- the  
9 witness characterized the point that is off of the  
10 map, and I -- I think we're entitled to have that  
11 indicated if -- if he's not going to be required to  
12 restate what he said.

13 MR. VALDIVIA: I'll agree to have him  
14 put it parenthetically "off map." But I just would  
15 like to identify where Garcia Hill is, generally, with  
16 respect to the groundwater flow.

17 THE COURT: If the witness will write  
18 "Garcia Hill" further northwest. Will that satisfy  
19 your needs, Mr. Hill?

20 MR. HILL: Yeah, I just -- if the  
21 witness had indicated, I --

22 THE COURT: Sure.

23 MR. HILL: I don't know where it is,  
24 but I thought he indicated that it was off of the map,  
25 and he didn't say how far off the map, and I just



1     wanted to be sure we didn't create a mistaken  
2     impression.

3                     THE COURT:   Okay.

4             A.       (Witness complied.)   Okay.

5     BY MR. VALDIVIA:

6             Q.       Thank you.

7             A.       Uh-hum.

8             Q.       You may be seated.   Now, when you testified  
9     yesterday regarding sampling, about the sampling,  
10    monitor well sampling, and that they're done on a  
11    quarterly basis; is that correct?

12            A.       I think what I said was during operations,  
13    monitor wells are sampled every two weeks.

14            Q.       Okay.   And you're referring to the outer  
15    ring; is that right?

16            A.       Yes.

17            Q.       And you just said, "during operations".  
18    Would that mean that currently the sampling is not  
19    being done?

20            A.       During restoration, we have authorization  
21    from the Commission to sample on a quarterly basis.

22            Q.       So currently -- currently the sampling  
23    being done in the outer ring is on a quarterly  
24    basis?

25            A.       Yes.

1 Q. Okay. And the purpose of that sampling is  
2 to detect excursions; is that right?

3 A. Yes.

4 Q. Could you, on that map, identify monitor  
5 wells 90 and 91 for me, please?

6 A. (Witness complied.)

7 Q. And here, I'll use -- I'll give you a  
8 yellow marker, and if you could just circle those for  
9 me, please.

10 A. (Witness complied.) 90 and 91.

11 Q. Let the record reflect that the witness has  
12 marked in yellow, monitoring wells 90 and 91. Thank  
13 you.

14 Okay. Isn't it true, Mr. Pelizza, that  
15 URI's screens for monitor wells 90, 91 are set too  
16 low?

17 A. Yes.

18 Q. And is it your intention to leave those  
19 screens in that level, then?

20 A. No.

21 Q. URI proposes to -- to work on those wells  
22 and change the -- the screening levels; is that  
23 right?

24 A. Yes.

25 Q. Are you familiar with Dr. Kier's prefile

1     regarding those two wells?

2           A.     Yes.

3           Q.     Didn't Dr. Kier indicate a concern that the  
4     faulty design of those wells would cause excursions or  
5     or facilitate excursions?

6           A.     I don't recall.  If -- if that's what he  
7     said, then I disagree with him.

8           Q.     Okay.  Yesterday you testified about the --  
9     the bleed, what you called the bleed, and that is a  
10    process whereby you withdraw water and maintain a low  
11    pressure area in the production zone.  Is that a fair  
12    statement?

13          A.     Yes.

14          Q.     And the purpose of the bleed is base -- is  
15    containment; is that right?

16          A.     Yes.

17          Q.     And -- and the bleed is something that you  
18    operate as a back-up to well field balancing; is that  
19    right?

20          A.     Yes.

21          Q.     Okay.  And well field balancing, that is  
22    something that is occurring only during production; is  
23    that right?

24          A.     No.

25          Q.     Okay.  Could you explain your answer?  How

1 do you achieve well field balancing when you're not  
2 producing a ring?

3 A. Wells are operating only if you're  
4 producing or you're restoring. And whether it be  
5 restoration or -- and restoration is conducted in the  
6 same engineered well field as operations are  
7 conducted. And the same engineering principles, the  
8 same operating techniques of balancing are used  
9 whether it be restoration or production.

10 Q. So in other words, your testimony is  
11 because there is restoration going on on the site at  
12 this time, that you have well field balancing?

13 A. In those areas, if there's restoration,  
14 there is well field balancing.

15 Q. Now, what about the areas and -- on this  
16 map, the Exhibit 1, is there restoration going on?

17 A. No, there's not.

18 Q. Okay. So there is no well field balancing  
19 occurring at this time; is that right?

20 A. There -- there can't be. There's no  
21 operations.

22 Q. So in other words, maintaining the bleed is  
23 the sole means by which you're achieving containment  
24 in this area; is that right?

25 A. Well, I -- I would suppose that you have

1 the --

2 Q. Is that right? Yes or no?

3 A. Maintaining the bleed is -- a bleed is  
4 maintained in production area three, yes.

5 Q. And so if for any reason the bleed were not  
6 happening, then you would have no containment  
7 mechanism in production area three; is that right?

8 A. We continue to have monitoring in  
9 production area three.

10 Q. Okay. But the monitors don't actually  
11 contain anything, do they?

12 A. The monitors verify containment.

13 MR. VALDIVIA: Objection.  
14 Nonresponsive.

15 BY MR. VALDIVIA:

16 Q. I'll ask the question again.

17 THE COURT: If you would.

18 BY MR. VALDIVIA:

19 Q. The monitoring wells do not actually  
20 contain, they only monitor; is that right?

21 A. The monitor wells monitor containment,  
22 yes.

23 Q. But they don't actually perform the  
24 containment?

25 A. Correct.

1 Q. Are you aware of any time when the bleed  
2 would -- was not operating in production area three?

3 A. I'm -- I'm not aware of that, no. I know  
4 we maintain a continuous bleed.

5 Q. So it would surprise you to hear testimony  
6 that the bleed was not continuous in production area  
7 three?

8 A. It would surprise me to know that on a --  
9 that -- that bleed is not contained for the, you know,  
10 for the duration required to provide containment.

11 Q. Isn't it true that if the bleed is improper  
12 or is not -- is not happening in production area  
13 three, that there's no physical barrier to prevent a  
14 lateral excursion?

15 A. If there were no bleed -- if there were no  
16 bleed, there -- it -- there is no physical barrier to  
17 prevent excursion, I'll agree with that.

18 Q. Okay. So without a bleed, an excursion  
19 could happen in production -- in -- in production area  
20 three, and that excursion would tend to go in a  
21 northwest direction; is that correct?

22 A. Very slowly, yes.

23 Q. Okay. I believe you testified to the flow  
24 rate in the production area in your prefiled testimony  
25 at Tab B. Do you recall what you -- do you recall

1     what you said the flow rate was?

2           A.     I think that I said it was approximately 30  
3     feet per year.

4           Q.     And that rate is exceedingly slow; is that  
5     right?

6           A.     Yes.

7           Q.     And in fact, in that same paragraph you say  
8     that at that rate, water would never reach the  
9     monitoring wells during the time of operation for  
10    monitoring; is that right?

11          A.     I think I said five years.

12          Q.     Five years is the time of operation. Plan  
13    time of operation of the monitor; is that right?

14          A.     Yes.

15          Q.     Now, we also -- you testified yesterday  
16    regarding -- we talked some about construction of  
17    these monitoring wells, and I don't think we got a  
18    clear answer about -- the life of the mine is five  
19    years, that's your testimony; is that right?

20          A.     Approximately.

21          Q.     Okay. How long are the monitor wells  
22    designed to last?

23          A.     My opinion is that the monitor wells will  
24    last indefinitely.

25          Q.     Okay. So there is no amount of time that

1 those wells could be in the ground that you would  
2 expect them to deteriorate and no longer be useful for  
3 that -- for their purpose; is that right?

4 A. Yes. These are -- these are plastic wells  
5 that are -- that the material is an inert. They're  
6 much like the wells that are used in ranches and such,  
7 and they're -- they're groundwater wells, and they're  
8 -- and they are groundwater wells. And they're  
9 installed to last indefinitely unlike, say, a steel  
10 casing, which may rust.

11 MR. VALDIVIA: I pass the witness.

12 THE COURT: Staff?

13 CROSS-EXAMINATION

14 BY MR. REDMOND:

15 Q. Is URI currently monitoring the Kingsville  
16 Dome Mine in any production area?

17 A. No, we're not.

18 Q. When was the most recent production at the  
19 Kingsville Dome Mine?

20 A. I believe production ceased in -- it ceased  
21 in June of 1999. I don't recall the exact date.

22 Q. Is URI currently restoring groundwater at  
23 the Kingsville Dome Mine using reverse osmosis?

24 A. Yes, we are.

25 Q. In your prefiled testimony, you stated that



1     URI must treat six pore volumes of water. What is the  
2     basis for determining six pore volumes?

3           A.     Six pore volumes was based on an -- a  
4     historic amount where we believe that the parameters  
5     that indicate groundwater restoration had reached a  
6     point that were consistent with baseline.

7           Q.     Is there a requirement in rule or permit  
8     that limits restoration to six pore volumes?

9           A.     No, not that I'm aware of.

10          Q.     Okay. Could it take more than six pore  
11     volumes?

12          A.     It could.

13          Q.     In your previous discussions with  
14     Mr. Valdivia, you used the term "product water" in  
15     describing restoration. Could you tell me what  
16     product water is?

17          A.     Yes. Water is sent through a reverse  
18     osmosis unit, and -- and essentially, the reverse  
19     osmosis unit is a type of -- a molecular filter.  
20     Water is sent through the filter, process water works  
21     through the filter and is filtered of undesirable ions  
22     and salts, and is essentially, the cleansed water that  
23     comes off of the reverse osmosis -- reverse osmosis  
24     unit.

25                   THE COURT: Mr. Redmond, I'm going to

1 interrupt you for just a second just so I can make  
2 sure I have the terminology. I understood your  
3 question to be about product water, and I understood  
4 the witness's response to be about process water. Am  
5 -- am I misunderstanding you?

6 THE WITNESS: Let me say it again if  
7 I -- if --

8 THE COURT: Okay.

9 THE WITNESS: Because -- yes, you must  
10 have because you asked the question.

11 A. Again, the reverse osmosis is a filtration  
12 process. Water is processed through the filter. The  
13 product water is the water that works its way through  
14 the filter and is the cleansed water that comes off of  
15 the reverse osmosis process.

16 THE COURT: Thank you very much. I  
17 apologize for the interruption. Please, continue.

18 BY MR. REDMOND:

19 Q. You described that the reject water is  
20 directed to the waste disposal well?

21 A. Yes, sir.

22 Q. Where does the product water direct?

23 A. The product water is sent back to the well  
24 field through the same wells that were used in the  
25 mining process, reinjected into the ground, into the

1 aquifer where it is used to flush the sands and -- and  
2 essentially, mitigate the impacts of mining by  
3 flushing the sands with cleansed water.

4 MR. REDMOND: I have no further  
5 questions. Pass the witness.

6 THE COURT: Okay.

7 CROSS-EXAMINATION

8 BY MS. MANN:

9 Q. I'm going to -- first thing. There was  
10 some confusion yesterday about first overlying and  
11 second overlying sands on my part. And I'm sorry, but  
12 I'm going to have to ask you to explain that again  
13 very briefly.

14 First of all, I understood there was a  
15 250-foot level sand and a 450-foot level sand. Could  
16 you explain which is first overlying, which is second  
17 overlying, and which spacings apply to each? And then  
18 we can be done with that topic.

19 A. At the Kingsville Dome site in PAA3, we  
20 have identified two sands that overlie the production  
21 zone.

22 Q. Uh-hum.

23 A. We have identified one sand that underlies  
24 the production zone -- or there's one sand that will  
25 require only the first sand is measured in over --

1 underlying.

2                   The production zone at Kingsville is --  
3 maybe if I pulled out a -- a graphic just to lay this  
4 out, it would help just a bit.

5           Q.       That will be fine.

6                   MR. HILL: Go off the record while we  
7 dig this out.

8                   THE COURT: That'll be fine.

9                   (Off the record.)

10                  MS. MANN: We are back on the record?

11 BY MS. MANN:

12           Q.       You were just about to bring out some sort  
13 of demonstrative --

14           A.       Yes. And just ask the question again,  
15 please.

16           Q.       Sure. Basically, yesterday I got confused.  
17 And I was curious if you'd be able to explain to me  
18 again the -- the difference in the classifications of  
19 the -- of the sands. There was a 250-foot sand, a  
20 400- -- a 400-foot sand, and one was classified as  
21 first overlying, one was classified as second  
22 overlying, and they had different requirements for  
23 well spacing. If you could just sketch that out for  
24 me again, that would be great.

25           A.       What I put on the easel are two figures

1 that are out of the production area authorization.  
2 They've actually got some very minor revisions to them  
3 that were included with one of our geologist's  
4 rebuttal prefile. But the -- the maps are effectively  
5 the same for -- for the purpose of what we're talking  
6 right now. This is a map which shows the --

7 MR. HILL: Your Honor, let me request  
8 that the witness indicate the map so that -- and when  
9 sweeping gestures like this won't translate, so if you  
10 could refer us to where this map is and the materials  
11 we have, if we have them, and you -- and refer so that  
12 we can follow in the record. Thank you.

13 THE COURT: Is there a page number that  
14 this is taken from?

15 MR. VALDIVIA: Your Honor, while he's  
16 looking, I just want to reiterate that this appears to  
17 be some portion of the rebuttal testimony, so I have a  
18 standing objection on that.

19 THE COURT: And your standing objection  
20 is noted.

21 A. These maps are in Tab 2 of the production  
22 area authorization application entitled cross  
23 sections. This first map is a cross section index  
24 which shows the locations of the cross sections in  
25 plan.

1                   The cross section index shows the  
2   location of the monitor well ring, PAA3. It shows the  
3   locations of the various monitor wells. It,  
4   essentially, is the same map that we -- that was  
5   Protestant's Exhibit Number 1, except it's got the  
6   additional information superimposed on it which shows  
7   the locations of the cross sections.

8   BY MS. MANN:

9           Q.     And -- and by cross sections, you're  
10   referring to what I was asking about earlier about  
11   overlying and underlying sands; is that correct?

12          A.     Yes. And the cross sections will answer  
13   your questions.

14          Q.     Okay.

15          A.     As an example of a cross section, I've  
16   shown a cross section AA Prime, which is the same  
17   cross section that is within the PAA application with  
18   some minor changes on it that are -- are included in  
19   the prefile.

20                   These are the same logs that are in the  
21   application since 1997, which shows the general  
22   geology at the site and it answers your question.

23          Q.     Okay.

24          A.     For simplicity, I will refer to a  
25   generalized lithologic column that we have put on the

1 side, which reflects what the logs show. The  
2 production sand is shown as the AB sand production  
3 zone at this site.

4 The underlying sand -- and we typically  
5 don't drill through to that sand -- it's -- is -- is  
6 -- except in the wells that are used to monitor that  
7 sand, is the double A. That's the first underlying  
8 zone. My understanding of the rule is those wells are  
9 spaced at one per eight acres.

10 Q. Is that the -- is that actually the case  
11 for these wells?

12 A. Yes.

13 Q. Okay.

14 A. And now we have the first overlying clay.  
15 And -- and this is a predominant shale as shown in the  
16 lithologic line over the site. It's a very thick  
17 shale, clay. Clay stone. These logs have a scale of  
18 one, 200 feet. So here you can see we have about 150  
19 feet of clay overlaying the production sand. The  
20 first overlaying aquifer is the 400-foot sand.

21 Q. Okay.

22 A. And then we have another sequence of clay  
23 stone, and the second overlying aquifer is the  
24 250-foot sand.

25 Q. Okay.

1 A. And that's the way the cake is built.

2 Q. Okay. And how -- what -- what are the  
3 spacing of the wells in the first overlying sand?

4 A. Generally, the first overlying aquifer,  
5 according to the rule, is one per four acres.

6 Q. Okay.

7 A. And the second is one per eight acres.

8 Q. And so how many does URI have at -- in the  
9 first overlaying sand?

10 A. Well, and again, this is where -- where we  
11 have to look at the geology in the area and do  
12 professional interpretation.

13 Q. How many do you have --

14 A. Eight.

15 Q. Eight. Okay. So the -- the first  
16 overlying sand is deeper and you have eight. And the  
17 second overlying sand is a little bit more shallow  
18 coming from the surface; is that correct?

19 A. Correct.

20 Q. At 250 feet. And you have how many there?

21 A. I believe the number was 17.

22 Q. Seventeen. Okay. Okay. And the -- the  
23 spacing on that, according to the regs, is one per --

24 A. Well, one per eight.

25 Q. One per eight. Okay. Okay. I think that



1     answers my questions, as far as the sand goes.

2                   I noticed in your direct testimony on  
3     Page -- let me find it -- 21 of 28 of your -- of your  
4     direct testimony before all the tabs, Question Number  
5     59. The question was asked: Does URI's compliance  
6     history warrant renewal of both of it -- of both of  
7     its permits? And you answered it.

8                   And I was wondering if you had any  
9     experience -- with regulatory experience in  
10    interpreting compliance history or what your  
11    experience is with TCEQ compliance history as far as  
12    evaluating whether or not you had a quote, excellent  
13    in warrants renewal?

14                  Do you have any experience in that sort  
15    of interpretation?

16           A.     I have never been a -- a employee of the  
17    State of Texas, if that's what you're asking.

18           Q.     So -- but what professional experience do  
19    you have that allows you to state that it -- that your  
20    compliance history is excellent in warrants or  
21    renewals with permits?

22           A.     My opinion is is that -- is just what it  
23    said.

24           Q.     Okay.

25           A.     My experience is that I have -- I have

1 responsibility for compliance in this company, and I  
2 audit compliance, and -- and I review what are --  
3 every -- every single inspection report and every  
4 single compliance issue, so I have a very thorough  
5 knowledge of what the compliance is of our company.

6 Q. That's enough. Thank you. I have one  
7 final question and it was in regards to your  
8 requirements as far as following a restoration  
9 timetable?

10 A. Yes.

11 Q. It was described as an estimate; is that  
12 correct?

13 A. Yes.

14 Q. Estimated timetable. And in regards to the  
15 estimated, both the restoration timetable and the mine  
16 plan, they're both estimates; that's correct?

17 A. Yes.

18 Q. So that means that the 400-foot requirement  
19 for monitoring wells around the production area and  
20 the map that was referred to as Protestant's 1 that we  
21 were discussing, that monitoring well ring, it's the  
22 -- the requirements are that it's 400-feet around the  
23 production area; is that correct?

24 A. Yes.

25 Q. And your explanation for the reason why it

1 was more like a thousand feet to the south of the  
2 production area was that you hadn't produced in that  
3 area yet; is that correct?

4 A. My -- my testimony is is the well field  
5 patterns have not been built in that portion of the  
6 production area yet.

7 Q. Does URI ever have to, if you've considered  
8 an estimated mine plan, ever actually have to build in  
9 there, in those -- in the more southern part of the  
10 mine?

11 A. In other words to --

12 Q. Do you have a timetable that you have to  
13 meet according to the regulations that would actually  
14 make you have to drill in those areas to make the  
15 monitoring wells be 400 feet away?

16 A. No, not to my knowledge.

17 MS. MANN: That's all. Wait. Excuse  
18 me.

19 (Sotto voce discussion between  
20 Ms. Mann and Ms. Rowland.)

21 BY MS. MANN:

22 Q. One last question and then we'll be  
23 finished.

24 Earlier, Mr. Valdivia was asking about  
25 wells 90 and 91, which appear to monitor water,

1 underground water, in the northwest direction?

2 A. Yes.

3 Q. Is that -- is that true? Are there any  
4 other wells other than 90, 91 that might monitor  
5 groundwater movement in the northwest direction? And  
6 if so, which ones are they?

7 A. I've testified that there's a circle of  
8 monitor wells that monitor the wells that monitor all  
9 around the production area.

10 Q. Yes.

11 A. And generally speaking, if I was to say in  
12 the northwest direction, I would say that wells from  
13 78, possibly over to about 94, could generally be  
14 called wells that monitor flow in the northwest  
15 portion of the area.

16 MS. MANN: Okay. I pass the witness.

17 THE COURT: I have a couple of  
18 clarifying questions.

19 EXAMINATION

20 BY THE COURT:

21 Q. Mr. Pelizza, you testified earlier that no  
22 liquid waste is shipped to the Kingsville Dome Mine;  
23 and however, you testified that waste from the Vasquez  
24 site is shipped there in dry form, or at least that  
25 was my understanding. Did -- did I understand that

1 correctly?

2 A. No, sir.

3 Q. Okay.

4 A. Product is shipped from the Vasquez site to  
5 the Kingsville Dome Mine.

6 Q. Okay.

7 A. And it's -- and it's very pure form of  
8 product without waste.

9 Q. All right. Thank you.

10 Can you tell me what the current status  
11 is of PAA3? And give me just a little bit of a  
12 history of how it got there.

13 A. PAA3 is -- is the -- the physical hardware,  
14 the monitoring wells that we see on all of these maps  
15 that are presented before us are there. As -- as --  
16 as part of the construction of a PAA for application  
17 permits under an area permit -- application purposes  
18 under an area permit, we confer with staff with  
19 pre-application types of meetings, and we design the  
20 location of the monitor wells based on good judgment  
21 and the rules. And -- and the company installs that  
22 hardware, and that has been done. That was done in --  
23 in the 1997 era.

24 From there, the -- the firm, and -- and  
25 with that, the infrastructure is in place for

1 monitoring at a production area. From there, PAA3 is  
2 somewhat unique in that the production area was  
3 approved, and the company began the very early phases  
4 or the first two well fields, if you will, inside of  
5 the production area.

6 Under normal circumstances, with the  
7 production area, if -- if this was a hearing that was  
8 held, let's say, in 1997, we wouldn't have that  
9 initial well field pattern in the production area to  
10 talk about today. This is the only one in history  
11 because it went to a court proceeding and it came  
12 back.

13 So at this point now, the first two  
14 well fields in the production area have been  
15 completed. They have -- there has been production  
16 from those two well field patterns. In mid 1999,  
17 June, those patterns were placed in a standby mode  
18 because of poor uranium market conditions.

19 The PAA subsequent to that was remanded  
20 back to the Commission from the court. There had been  
21 no injection activity at this site since because it  
22 can't without a PAA. And it now stays in the standby  
23 mode where, although, there is not an active PAA,  
24 under the terms of the base permit, the company  
25 continues its groundwater monitoring programs.

1 Q. Okay. Thank you. Let me -- and I don't  
2 mean to interrupt you. Have you finished your  
3 response?

4 A. We also maintain a bleed --

5 Q. Right.

6 A. -- off of this PAA, according to the  
7 provisions of the base permit even though the PAA has  
8 not been finally approved.

9 Q. And how does the standby mode differ from  
10 restoration mode?

11 A. The active restoration mode would be actual  
12 operations occurring at the site. In other words,  
13 restoration has been ongoing at PAA1 and PAA2 now  
14 for -- for quite a few years. PAA1 restoration is  
15 essentially complete. PAA2 is where we have active  
16 restoration ongoing right now. There, we have well  
17 field patterns equipped with pumps and injection  
18 facilities where reverse osmosis water is injected  
19 into the injection wells, formation water is produced  
20 from the pump wells and taken to the reverse osmosis  
21 unit.

22 So essentially, you have operations  
23 occurring during the active restoration mode. Yet, in  
24 a case like PAA3, we're in a standby mode where,  
25 essentially, you have ambient conditions that are

1 ongoing. So there is no injection and there is no  
2 extraction.

3                   You effectively have well fields  
4 natural balance because you have ambient conditions,  
5 only if a bleed occurring to maintain a cone of  
6 depression.

7           Q.       And has the drilling of production wells  
8 affected the natural ambient conditions?

9           A.       The actual drilling of production wells,  
10 just the -- the physical act of drilling has no affect  
11 on the ambient conditions. It's not unless you're  
12 injecting and extracting that you've increased the  
13 gradient locally in and among injection wells and  
14 extraction wells that you would impact ambient  
15 conditions. But without any operations occurring in  
16 the area, the physical -- the fact that a well is  
17 physically located there, has no impact on an ambient  
18 condition.

19                   In other words, if we were to go in now  
20 and measure water levels in the individual injection  
21 and extraction wells that are found within PAA3, we  
22 would observe water levels that reflect ambient  
23 conditions.

24           Q.       And when say you increase the gradient, is  
25 that -- is that metaphorically speaking or is that



1 actually speaking? My -- my question is: Is it not  
2 the case that the gradient is never changed, but  
3 instead the pressure is changed that would have affect  
4 as though the gradient were changed?

5 A. You would literally increase the gradient  
6 in between individual injection and extraction  
7 wells.

8 Q. How is that done?

9 A. Well, by injecting into a well, you  
10 increase the pressure gradient on the injection  
11 well.

12 Q. I see.

13 A. And by extracting on the production well,  
14 you decrease the pressure gradient on the extraction  
15 well and you, essentially, increase it in between  
16 individual wells. Yet, as you move away from the well  
17 field and away from the influence of the production  
18 well field, the -- and -- and to the monitor well ring  
19 and then beyond, then the gradient returns to,  
20 essentially, normal.

21 Q. And so when speaking of the gradient,  
22 you're not speaking of a geological gradient, you're  
23 speaking of a pressure gradient?

24 A. I'm speaking of a -- of a hydrologic  
25 gradient of the groundwater pressures, yes, sir.

1 Q. Okay. Thank you. You testified briefly  
2 about the use of pore volumes, P-O-U-R, pore volumes.

3 A. P-O-R-E.

4 Q. All right. P-O-R-E volumes. Can you  
5 explain what that is and -- and what that describes  
6 and how it's used?

7 A. A pore volume is a term of convenience used  
8 by the -- by our industry. Rock is the geologic  
9 formation, is a three dimensional mass underground.  
10 And both in production and in restoration, the -- the  
11 miner requires a unit of measurement so they can  
12 quantify what volume of -- of water they flow through  
13 the rock.

14 What a pore volume is is a unit -- unit  
15 volume of rock, three dimensional volume of rock, and  
16 it -- and for example, if -- if a well field pattern  
17 was -- and I'll just use an acre and -- which is  
18 43,560 feet -- and it were 10 feet thick, then we can  
19 calculate the volume of that production zone.

20 To that, we apply a porosity factor of  
21 the rock. Typically, rock -- and -- and let's say the  
22 Goliad sand may have a porosity of 25 percent, so that  
23 the voids in between the sand grains make up 25  
24 percent of the total volume of the rock. The pore  
25 volume, then, would be the volume of the rock times 25

1 percent. That would be the volume of the -- of water  
2 that that rock would hold.

3 We can, therefore, calculate the area  
4 of the rock, the volume of the water that is within  
5 that rock matrix and -- and convert cubic feet of  
6 water to gallons. That gallon number is a pore  
7 volume, and for our purpose it's -- it -- it  
8 determines how big one flush of water is through the  
9 rock volume.

10 Q. Your testimony that URI uses six of those  
11 pore volumes for restoration, can you explain how that  
12 number was determined and -- and what is going on when  
13 you use six pore volumes?

14 A. I'll do that. And I'll add one more piece  
15 of information before I do that. I explained how we  
16 calculate a gross pore volume. But in our business,  
17 it's expected that they'll be some flare during the  
18 mining activity outside of the actual three dimension  
19 volume of rock.

20 In other words, as -- as we've spoken  
21 in this hearing, there is no boundary that, you know,  
22 there is no wall that contains water inside the  
23 production zone. So we -- we apply pore volume  
24 factors to our actual pore volume number. The number  
25 that we typically would use and -- and have used

1 historically in -- in our business is a pore volume of  
2 flare factor of 1.3 horizontally and 1.5 vertically.

3 So essentially, when we get done,  
4 multiple -- of calculating a pore volume, we add these  
5 dispergent factors to the -- the number for an  
6 individual pore volume and that gives us a corrected  
7 pore volume for flare. Now, -- and that's just to  
8 show you that the number is actually bigger than --  
9 than I had explained a second ago to be -- for -- for  
10 -- to be conservative. From there, we can calculate  
11 based on gallons how long it takes to do reclamation.  
12 And we -- we -- we keep track of the rate of  
13 reclamation in pore volumes.

14 Now, what we determined historically is  
15 it takes six flushes where we have to flush six  
16 volumes of water through the rock based on the way  
17 that I just explained that -- to calculate it -- that  
18 it's calculated, that restoration is achieved. And --  
19 and it could be more, it could be less. But  
20 historically, six pore volumes is -- is the number  
21 that we have found to be reasonable. That's important  
22 because to move a unit volume of water through the  
23 rock requires a cost and that's how we calculate our  
24 sureties.

25 Q. How long does it take to move one pore

1 volume through the rock?

2 A. It would depend on the size of the pore  
3 volume. In other words, if -- if -- if the rock were  
4 this big, and I'm saying that just as an illustration,  
5 it wouldn't take very much time at all. But with a  
6 well field -- hold on.

7 Yeah. I'd have to have an example of a  
8 well field where we could calculate the amount of  
9 gallons in that well field, and given those amount of  
10 gallons, I could tell you how long it would take to  
11 move a pore volume through that unit volume of rock.

12 Q. In PAA3, are we speaking of a series of --  
13 lithographic levels or stratigraphic levels or is  
14 there an average with which we deal? That is, you've  
15 asked me for a -- you've told me that in order to  
16 respond to my question with a figure, you would have  
17 to know the specifics.

18 And my question is: Does PAA3  
19 represent a specific or does it represent a whole  
20 series of specifics with which URI will have to deal?  
21 Is my question unclear?

22 A. Yeah, I'm sorry. I don't think I  
23 understand your question.

24 Q. I'm going to go back to the document with  
25 which Mr. Valdivia had some concern, and this is the

1 revised Kingsville Dome Project Stratigraphic Cross  
2 Section A to A Prime, revised July 6, 2005, from which  
3 you were speaking previously.

4           And what I understand that it shows is  
5 a series of stratigraphic levels depending on how  
6 deeply the well has been dug, drilled. And my  
7 question is -- let -- let's just say given these  
8 wells, is there an approximate number of days, months  
9 or years that it would take for your six pore volume  
10 to be achieved?

11           A.     The approximate -- yes. There is an  
12 approximate date and that would be reflected in the --  
13 in the revised mine plan that was tendered as part of  
14 this hearing, and that's an approximate date. It  
15 will -- and it will be updated depending on the  
16 conditions that are encountered as the -- the -- as  
17 the production area is developed, as additional  
18 delineation wells are -- are drilled, and as actual  
19 well field patterns are put in and the dimensions of  
20 the actual well field patterns are known.

21           I guess you could look at it as an  
22 as-built type of -- of level of detail. Our  
23 approximate, our estimate at this point in time is the  
24 approximate that was in the most revised version of  
25 the mine plan.

1 Q. And that number would be?

2 A. It would be in the figure that I spoke of  
3 yesterday, which -- which was xeroxed the wrong way.  
4 And I -- if you could -- if I could look at it, I'll  
5 recite it for you.

6 Q. Yes, please.

7 MR. HILL: Did we make that an exhibit?

8 THE WITNESS: It was an exhibit.

9 THE COURT: If that's the case, then  
10 the exhibits are -- here. Why don't we go off the  
11 record.

12 (Off the record.)

13 BY THE COURT:

14 Q. You've now identified the missing document.  
15 And -- and the time period?

16 A. Four years.

17 Q. Four years. Okay. And so that would be  
18 the period of time that would be required for  
19 restoration to be completed?

20 A. Yes.

21 Q. Now, how do you determine that, that  
22 restoration is complete? What is complete?

23 A. That -- that -- that is an estimate of the  
24 time. Restoration is complete at, you know, where --  
25 restoration is complete where we've -- ultimately the

1 Commission determines that restoration is complete.  
2 We base this estimate on a time where we -- we have  
3 based -- seen parameters that we measure both  
4 pre-mining and post-mining to be restored to levels  
5 that we believe are consistent with baseline according  
6 to the rules.

7 Q. Okay. So with respect to -- to baseline,  
8 my understanding of your use of that word means about  
9 what I'm about to say, and if I'm wrong, if you'd  
10 correct me, I'd appreciate it.

11 But my understanding is, or my guess is  
12 is that what happens is URI takes readings of alpha  
13 emissions, the presence or absence of certain types of  
14 minerals, the water quality, generally, the amount of  
15 dissolved solids, those sorts of things, and then  
16 establishes that as the conditions, as they exist, the  
17 baseline. That information is then used to compare  
18 against the conditions when production stops, and then  
19 the goal of restoration is to achieve baseline once  
20 again.

21 A. That is correct.

22 Q. Am I correct?

23 A. Yes.

24 Q. Okay. Now, then, your testimony also was  
25 that in this unique case of PAA3, the well fields or a



1 couple of well fields have been completed. Am I  
2 correct on that?

3 A. Yes, they have.

4 Q. How many more would be completed upon  
5 PAA3's maximum development?

6 A. I cannot tell you how many well field --  
7 well fields. To be clear, well fields are -- are an  
8 accounting unit for the company. It has nothing to do  
9 with -- with any of the permitting. It's a matter of  
10 accounting and the company designates as well fields  
11 for the purposes of depreciation and -- and accounting  
12 purposes.

13 So I can't tell you exactly how many  
14 well fields the company will elect to break out for  
15 accounting purposes. I can show you on that map the  
16 areas which -- and by that map, either Exhibit 1 or  
17 the cross section index, which are similar, I can show  
18 you the areas which we have a -- we know of  
19 mineralization that will be developed as part of the  
20 orderly development of the production area that will  
21 be -- will contain well field patterns.

22 Q. Please -- and -- and if there is a term  
23 that is more amenable to your descriptive needs,  
24 please, go ahead and use it.

25 A. Well, well fields are definitely a term

1     that we use internally within our firm.  Other  
2     companies use patterns, production areas are in the  
3     rules, and they're all the same thing.

4           Q.     Okay.

5           A.     But generally speaking, what we have is we  
6     have two frontal fairways at the production area 3.  I  
7     would anticipate that we would have two major zones of  
8     well field patterns developed that -- that would  
9     follow those fairways.

10          Q.     Okay.  And just for the purpose of the  
11     record, what you're referring to is Protestant's  
12     Exhibit Number 1, and you're pointing to, generally,  
13     the areas that are the blue crosshatched running  
14     northwest.

15          A.     Yes.

16          Q.     Okay.  Please, proceed.

17          A.     I think that answered your question.

18          Q.     Okay.  I didn't mean to cut you off if  
19     there was more.

20          A.     No.  And -- and I would like to make a  
21     point that -- that these are fairways of  
22     mineralization as we do additional delineation, as is  
23     always the case in this business, there'll be  
24     wigglings of these lines.

25          Q.     Okay.

1           A.       To some extent.

2           Q.       All right. Thank you.

3                   MR. HILL: Excuse me, Your Honor?

4                   THE COURT: Yes.

5                   MR. HILL: The witness was standing  
6 between my -- me and the paper he was pointing to when  
7 he swept his hand and said something about "these  
8 lines." And I don't know what he pointed to.

9                   THE WITNESS: I -- I meant these two --

10                  MR. HILL: Excuse me -- excuse me,  
11 Mark. He's your witness, not mine. But I wanted to  
12 ask if you would clarify what he pointed to so I would  
13 know.

14                  THE COURT: If you would repeat your  
15 testimony.

16                  MR. HILL: Okay.

17                  THE WITNESS: I need a pointer.

18                  MR. HILL: No, I'll just -- I'll just  
19 go stand out here and watch. Thanks. Go ahead.

20           A.       I just referred to these two mineralized  
21 fairways through the production area.

22 BY THE COURT:

23           Q.       The reject water, if you wouldn't mind  
24 restating what is done with the reject water.

25           A.       The reject water is the feed to the

1 industrial waste disposal well. What happens is it  
2 comes off of the reverse osmosis unit, and again,  
3 with -- what happens with this type of filtration  
4 system is water is -- is pressed through a membrane,  
5 an ultra fine filter if you'd like to think of it that  
6 way, an ion filter, if one would like to think of it  
7 that way, where -- where the water is pressed through  
8 and product water, 65 to 75 percent of the total  
9 quantity, is passed through and the reject water is  
10 just that.

11 It's rejected and comes back off of the  
12 system and all of -- or most of the salts that were  
13 contained in the initial 100 percent, are now  
14 concentrating in the reject 25 to 33, 34, 35 percent,  
15 which makes that water brine. And that water is  
16 diverted to the waste disposal well and injected.

17 Q. Okay.

18 A. It's diverted to a holding tank, which is  
19 essentially a tank that is a surge, provides surge  
20 capacity, and then it is taken to the disposal well  
21 for injection.

22 Q. And drawing on the misty past of my classes  
23 in chemistry, my recollection is that a salt is the  
24 combination of a halide and a metal, chemically.

25 A. Uh-hum.

1 Q. So are we talking about all types of salts  
2 or are we only talking about sodium chloride?

3 A. I guess the answer is all types. Just  
4 quickly, sodium chloride is a significant -- in terms  
5 of the total dissolved salts, sodium chloride is  
6 certainly a major component. We also have a strong  
7 carbonate --

8 Q. Right.

9 A. -- component, so that it would be sodium  
10 carbonate. We have sulfide in the formation so that  
11 the high concentration of sulfate's in the water. So  
12 if -- if one were to look at the predominant cation  
13 and anion species that -- it would be pretty -- all of  
14 them would be pretty well represented in the waste  
15 stream.

16 Q. There was some description in your direct  
17 testimony about the chemical processes involved in the  
18 mining of uranium. And the testimony includes the  
19 fact that one of the reasons that uranium is able to  
20 be mined through an ISL process is that it is highly  
21 soluble in water. Do I understand that correctly?

22 A. It is highly soluble in water in the  
23 oxidized form.

24 Q. Right. And so with respect to those salts  
25 in the reject water, are we -- are we also dealing

1 with uranium salts as well?

2 A. There will be uranium in the reject water,  
3 yes. You're -- yes.

4 Q. And so that's reinjected as well?

5 A. Into the disposal well?

6 Q. Yes.

7 A. Yes.

8 Q. All right. And what actions or measures  
9 are taken to ensure that those uranium salts and the  
10 radioactivity associated with them don't otherwise  
11 compromise the quality of the water into which it's  
12 being injected?

13 A. The deep disposal well is -- injects into a  
14 zone that is very deep, that has extremely poor  
15 quality water. The dissolved solids of the -- of the  
16 disposal well range in the 80,000 part per million  
17 range. So it's -- it's truly a non -- it's a brine,  
18 it's a oil field brine. And, in fact, if one goes at  
19 a distance, these are the same reservoirs that oil and  
20 gas is produced out of.

21 So the first assumption is is -- is  
22 the zone that is being -- that is accepting the water,  
23 has no other use at all in terms of -- as -- as water  
24 supplies or its quality water for anything. It's --  
25 it's far saltier water than the water that we are

1 injecting.

2                   The uranium -- and -- and so it's a  
3 basic premise of -- of this disposal technique. That  
4 the waste that we are placing -- and actually, they're  
5 -- they're classified -- this well is classified as a  
6 non-hazardous Class I, and that's a legal distinction  
7 in that the uranium and the radium that we have in --  
8 in these concentrations is not classified as a  
9 hazardous waste.

10                   Those parameters, while they will be  
11 undesirable to maintain in the shallower fresh water  
12 sands, don't have an impact of the quality of water  
13 in -- in the deeper sands because the water is -- is  
14 so salty and so briny that it is -- it has been  
15 presumed as being nonusable for any other use but  
16 industrial purposes. Very much like the refineries up  
17 and down the Coast that -- that use the same  
18 technology.

19           Q.       And -- and is the location of that  
20 otherwise unusable water, substantially deeper?

21           A.       Oh, yes.

22           Q.       Okay. Can you give us a little more  
23 information about that?

24           A.       We're injecting at the Kingsville under the  
25 Frio formation, I believe, and it's -- I think we're

1 in excess of 5,000 feet deep at this location. So  
2 it's a mile deep.

3 Q. Okay. What are the physical possibilities  
4 for hydrological communication between those two  
5 levels of water?

6 A. The disposal well in fresh water zones?

7 Q. Yes.

8 A. It's -- it's -- it's very deep. There are  
9 numerous geologic formations, shales, between the  
10 injection zone and the fresh water zone. So based on  
11 geology, the -- and our evaluation of geology,  
12 including faulting and structure in the area, the  
13 possibility for leakage is -- the word is impossible.  
14 There is no possibility for leakage in overlying sands  
15 and the -- and the injection zone, in terms -- in a  
16 geological context.

17 Q. Does the proximity of the Gulf of Mexico  
18 and the -- I assume the hydrologic push that it  
19 provides to -- to some level of -- of underlying  
20 levels of water, does that come into play in either  
21 promoting or eliminating the possibility of that  
22 deeper waters moving higher into more potable water?

23 A. Again, the disposal well.

24 Q. Yes.

25 A. I -- I can't envision any -- any



1 relationship there. I just -- I can't. I think that  
2 regionally, based on just regional gradients with a --  
3 with a dip to the Coast -- the Coast into the Gulf,  
4 yes, that would be the regional gradient for -- the  
5 natural regional gradient for all zones.

6 So regionally, I suppose one would take  
7 comfort in the fact that in geologic time, water would  
8 flow deeper and deeper and deeper. But from a  
9 practical standpoint with the way we evaluate  
10 pressures and the way we evaluate in our annual  
11 reports the cone of influence, we don't look at it at  
12 a regional content -- context, we look at it as a  
13 static context and just look at the -- the local cone  
14 of influence.

15 Q. Moving from the subsurface to the surface  
16 and then above, what effect, if any, does the  
17 meteorological conditions of this part of the world  
18 have upon mining?

19 A. You mean weather?

20 Q. Yes.

21 A. If we have a lot of rain, it makes it  
22 difficult to get around in the well field. And  
23 that -- and I -- and that's really the truth here  
24 because it's very -- it's low and it's flat and you  
25 know, we have instances where we weren't able to

1 sample monitor wells because, quite frankly, the mud  
2 was just too deep. But other than an inconvenience  
3 because after heavy rains it does dry, I'd say that's  
4 the extent of it.

5 We have, as everyone has, we have  
6 things like major tropical storms that we have a  
7 procedure to deal with. Luckily, we haven't had any  
8 major tropical storms for a few years, but -- but  
9 it -- it -- like any -- any business or individual  
10 in -- in -- in the Gulf Coast, you deal with those  
11 things. But other than convenience, I'd say the  
12 answer is none.

13 Q. As I recall in your testimony, there --  
14 there was a problem with a pump because a gasoline  
15 generator, some sort of gasoline engine, failed.  
16 Do -- do you recall that? And the answer may be no.  
17 I --

18 A. No. I -- it may be something like that,  
19 but that -- that I don't recall.

20 Q. Okay. Assume with me for the moment  
21 that --

22 A. Okay.

23 Q. Well, let me -- let -- assume nothing with  
24 me for any moment. How is it -- what is the source of  
25 the power for the wells that are in your production

1 area? Either production wells or monitor wells.

2 A. The -- for operations -- that's a two-part  
3 answer.

4 Q. Good.

5 A. For operations, we have service through  
6 Nueces Co-op. We have an electrical substation by  
7 our -- our site, and we're provided power through the  
8 local cooperative. And they're reasonably reliable.

9 For certain activities such as  
10 monitoring monitor wells -- I think that was something  
11 that you asked -- there, what we use is portable  
12 sampling devices. We, actually, at Kingsville, don't  
13 require that we generate power because we use air, so  
14 we're -- we generate compressed air, which is -- is  
15 something that's done with a portable rig on a trailer  
16 that goes from well to well.

17 Q. Okay. So my question is: Were there a  
18 hurricane that were to submerge your well fields, what  
19 impact would that have potentially on being able to  
20 preserve the mining operations and the control of  
21 migration of fluids from one place to another?

22 A. Well, if -- you know, again, I -- the --  
23 the whole answer on hurricanes is if there is a  
24 tropical storm or hurricane, the company would --  
25 would be required to go into a -- a mode that is --

1     that we would plan for hurricanes.

2                     And -- and if -- and first of all, the  
3     well field during an actual hurricane would not be  
4     operating, it would be shut down because of electrical  
5     issues.

6             Q.     Right.

7             A.     You know, we have electrical and  
8     occupational issues that probably would override any  
9     other -- any other concern. We'd fill our tanks, we'd  
10    fill our pipelines, we'd want to make sure all of our  
11    vessels were full so they wouldn't float away. We  
12    would safeguard our buildings, and just like any  
13    other -- any other business or -- or individual, would  
14    board up and -- and get ready.

15                    In the event of a hurricane, the well  
16    field would be shut down for the period of the storm  
17    and possibly until power is returned to the site.  
18    Over that period of time, the site would be in  
19    dormancy, but it would not interfere with any type of  
20    maintenance of flows and such because the -- the  
21    period at which the site was shut down compared with  
22    the period of time that the rate which groundwater  
23    moves would almost be immaterial.

24                    For example, if we were to shut down  
25    for a month, and that is longer than we've ever shut

1 down, but if we were to shut down for a month with  
2 water movements of 30 feet per year, which would be  
3 found to be accurate for this site, the rate that  
4 ambient conditions would allow water to move would be  
5 30 divided by 12, which is a very short distance,  
6 which is much smaller than even the types of distances  
7 that we anticipate on as a result of -- of normal  
8 mining activities.

9 So the -- the consequence of shutting  
10 down for a month would not impact the ability of the  
11 company to contain their well field solutions over the  
12 normal term of the project.

13 Q. And would a substantial rain change those  
14 migration estimates?

15 A. In other words, would the -- would a  
16 substantial rain change the groundwater flow?

17 Q. Yes.

18 A. No.

19 Q. Because the -- the distance down which the  
20 rain would have to percolate would be too great to  
21 have an affect?

22 A. The region -- this is an artesian -- the  
23 Goliad aquifer is an artesian aquifer.

24 Q. I see.

25 A. So --

1 Q. Nonrecharge?

2 A. It is not recharged locally. It is  
3 recharged in western counties.

4 Q. I see.

5 A. So -- and -- and we -- and as you saw on  
6 this cross section with the volume of clay, it's --  
7 there's more clay than anything else between the  
8 surface and the production zone. It would be  
9 impossible for recharge to occur locally. Recharge  
10 occurs where the Goliad outcrops further west in  
11 Texas.

12 Q. Tolerate just a question out of curiosity.  
13 How far west are we talking?

14 A. We have outcrops of the Goliad in Duval  
15 County.

16 Q. I see. Okay. With respect to the design  
17 of the wells themselves, is there a range of -- well,  
18 let me back up. Is there some dispute about which you  
19 know concerning well design for the purpose of  
20 preventing against excursions?

21 A. The questions I've been asked I think were  
22 all specific to the monitor wells.

23 Q. All right.

24 A. And --

25 Q. Monitor wells, then.

1           A.       There's not a dispute in my mind. I -- I  
2     think the wells are -- you know, we -- we've got years  
3     and years experience with -- with this type of design.  
4     They've been evaluated in our -- in our base permit,  
5     or area permit applications and such. I -- I think  
6     that the -- the design that we use is -- is  
7     well-founded and it has been over years and years of  
8     -- of history using this type of well design, we  
9     haven't encountered any problems. Had we encountered  
10    problems, we would have changed it.

11                    You know, early in -- in the years of  
12    solution mining many, many years ago, steel casing was  
13    used, for example. And steel casing is no longer used  
14    because with the addition of oxygen to the leach  
15    solution, steel rusts. So we don't use steel. So  
16    I -- I'm -- I'm -- my opinion is is that -- that our  
17    design is proper for this project.

18           Q.       And I -- and I'm not disputing that it --  
19    that it is -- that it's proper or that it --

20           A.       Yeah.

21           Q.       -- or where it stands. I'm just trying to  
22    see whether or not in the industry if there is some  
23    controversy going on as to good, better and best  
24    designs for these types of wells.

25           A.       I'm familiar with in situ operations in

1 Nebraska and Wyoming and in Texas. And the industry  
2 standard in that which is shown to be, stand the test  
3 of time and the wells that perform the best, are wells  
4 that are cased with a PVC pipe like we use, and -- and  
5 cemented in a way that -- that we do it. There are  
6 various completion techniques that different operators  
7 prefer, but in terms of the general construction of  
8 the well, that -- that one that we've talked about in  
9 this hearing, we -- our -- our technology is,  
10 essentially, state of the art.

11 Q. With respect to the beads, B-E-A-D-S, the  
12 beads that are used in the -- is it in the reverse  
13 osmosis process or the ion exchange?

14 A. No resin beads are used in the ion exchange  
15 process.

16 Q. What happens to the resin beads once they  
17 reach the end of their useful life?

18 A. Our desire is that resin beads never reach  
19 a end of a useful life. We -- we have much of the  
20 same resin that our company initially purchased with  
21 our first operations in 1978. It is used over and  
22 over and over again indefinitely. The only way that  
23 resin would come to the end of its useful life would  
24 be if the beads broke, physically broke, in which  
25 case they become a solid waste. And all of our solids



1 under our health department license are required to be  
2 disposed of in an off-site facility.

3 Q. And are these considered low-level nuclear  
4 waste or radioactive waste?

5 A. Well, in terms of the -- in terms of the  
6 legal definition, it's called a 11e2 byproduct  
7 material. In terms of its chemistry or its -- its  
8 physical properties, it's a very, very low level of  
9 radioactive waste, yes. But it is -- it's got a  
10 specialized legal definition for our industry, 11e2  
11 byproduct material.

12 THE COURT: Okay. Those are all my  
13 questions. Thank you. Your attorney may have some  
14 more for you.

15 MR. HILL: Your Honor, I see it's 12.  
16 I'd like to assemble my notes to organize the cross --  
17 the redirect of the witness if that's permissible, and  
18 I've got -- I can do that and get underway most  
19 effective. If we're going to take a lunch break, I --  
20 I can just do it while I'm waiting for -- for you to  
21 arrive.

22 THE COURT: We're definitely going to  
23 take a lunch break. Would this be a reasonable time?  
24 I -- I see some nods around the table with the  
25 exception of some.

1 MR. HILL: It's a little early for me,  
2 but I -- I, you know, I'll work a little bit and then  
3 eat.

4 THE COURT: Okay. It is five minutes  
5 after 12. Why don't we come back at -- well, as close  
6 to one as possible. Thank you very much.

7 (Lunch break)

8 REDIRECT-EXAMINATION

9 BY MR. HILL:

10 Q. Mr. Pelizza, do you recall being questioned  
11 at least once, if not more than once, over the subject  
12 of how pump testing monitors or protects or provides  
13 for containment? What's the relationship between --

14 A. Yes. I referred to pump testing a number  
15 of times over my -- through the course of my  
16 testimony. And pump testing is the, you know, in  
17 addition to geological evidence and engineering  
18 design, pump testing is essentially the demonstration  
19 that we perform prior to any mining activity and as  
20 part of PAA application that determines that the ore  
21 zone is -- is either isolated or sufficiently isolated  
22 from overlying and underlying zones and is in  
23 communication with the ring of monitor wells.

24 Q. You were asked a number of times about the  
25 identification of monitor wells completed into various

1     overlying formations.  Do you recall?

2           A.     I do.

3           Q.     Would you clarify, first, the simple or  
4     paradigm case of how a production zone, particularly a  
5     mining zone in a producing horizon, is monitored when  
6     the overlying sands are continuous over the producing  
7     zone?  That is to say, they don't pinch out.

8           A.     If there was no pinch out, then by  
9     definition they would be the same sand, and -- and  
10    there wouldn't be any monitoring necessary.

11          Q.     Let me recast this.  I want to ask you to  
12    describe the paradigm case in which there are two or  
13    more sands which are continuous over a zone which is  
14    mined and are monitored, and the first -- the first  
15    overlying and second overlying zones are monitored.

16                    Would you describe how you calculate  
17    the number of wells or place the wells into each of  
18    those in that case?

19          A.     In -- in a first overlying sand if -- if  
20    it's a -- with the existence of a first overlying  
21    sand, one would calculate those -- those wells based  
22    on the estimated area of the production area patterns  
23    based on one per four acres.

24          Q.     And the second overlying zone, if there is  
25    one, and we'll assume for now that there is a second

1     overlying zone, is populated with how many wells, or  
2     how many wells per acre?

3           A.     In the event there's a second overlying  
4     zone, the population would be based on -- on the  
5     estimated size of the production patterns of one per  
6     eight acres.

7           Q.     And would that be the same for the first  
8     underlying zone?

9           A.     Yes.

10          Q.     Now, in the instance -- do you recall  
11     mentioning the Vasquez Mine?

12          A.     Yes.

13          Q.     Did you say with regard to that mine  
14     something about the absence of an overlying aquifer or  
15     overlying zone to monitor --

16          A.     Yes. There -- there is an overlying zone  
17     at the Vasquez Mine.

18          Q.     So what do you do if you can't monitor  
19     it?

20          A.     If there's no overlying zone at the -- at  
21     the Vasquez Mine, what that would mean is that it  
22     would be essentially a clay stone from the production  
23     horizon to the surface. And there is no interval to  
24     monitor because there's no sand that would be capable  
25     of producing water for monitor well samples.

1           Q.       What implications does that have for  
2 additional thickness of overlying aquitards or sealing  
3 layers?

4           A.       The -- the fact that there are no overlying  
5 zones would indicate that it is all aquitard or  
6 sealing layers from the surface to the production  
7 zone.

8           Q.       Now, in the event that you had an ore zone  
9 that was overlaying by a sand which did not overlay  
10 the entire -- overlies the entire zone but only a  
11 portion of it, and then the sand identified above that  
12 at higher elevation were called, for convenience, the  
13 second overlying, how do you monitor in such an  
14 instance?

15          A.       Well, in that particular instance, if -- if  
16 the sand was to disappear, there was a facies change  
17 and the sand was to change from sandstone to shale  
18 stone, what that would mean is the entire sequence,  
19 including that sequence in elevation that has changed  
20 from sand to shale, is all -- has all -- the entirety  
21 has become confined interval.

22          Q.       All right. In such an instance, how does  
23 one ascertain where to place monitor wells so as to  
24 ensure effective monitoring for mining purposes?

25          A.       Well, of course, this is an instance which

1 is based on -- on site-specific local geology, and it  
2 would require working with staff and using best  
3 professional judgment based on our -- our knowledge as  
4 geologists to find the proper application of the  
5 rules. And -- and in the case of -- of the production  
6 area 3, which is the subject of this hearing, that's  
7 exactly what we did.

8 We have a -- a first overlying aquifer,  
9 which disappeared because of the geology, and -- in --  
10 in working with staff geologists and -- and using  
11 our -- our best professional judgment for proper  
12 application of the rules, obviously it became  
13 impossible to monitor the first overlying zone because  
14 it wasn't there. And what we did is we added an  
15 additional amount of MW-250 or second overlying zone  
16 wells in the location above the ore where there was no  
17 400-foot zone available.

18 Q. Do you have an opinion as to the -- a  
19 professional opinion as to the adequacy of the  
20 monitoring proposal which URI made to the Commission  
21 staff in regard to the monitoring of overlying zones  
22 over the footprint of PAA3?

23 A. Yes. Given the --

24 Q. Would you state it, please?

25 A. -- the site-specific geology, the thickness

1 of the shales, the clay stones overlying the  
2 production sand, the fact that the -- the 400-foot  
3 sand effectively disappears as one moves out of the  
4 southern portion of PAA3, it would -- we have 400-foot  
5 zone wells adequately spaced in the southern portion,  
6 and I say southern loosely. One can look at the map,  
7 it would be more south, along the south edge of the  
8 production sand, the -- the production area, those are  
9 spaced adequately.

10 The 250 sands on -- on the northern  
11 portion of the production area have a very, very thick  
12 aquitard between the production zone and the sand  
13 itself. We have increased the density of the spacing  
14 to about 400 foot by 400 foot, which is about a  
15 four-acre spacing in that northern portion. So that  
16 gradation of monitor well spacing, in my view, is  
17 adequate to protect overlying sands and monitor  
18 overlying sands from the presence of leach solution.

19 Q. Do you have a professional opinion as to  
20 the adequacy of the pressure testing which was  
21 conducted over PAA3 to establish, first of all, the  
22 integrity of the wells?

23 A. I do.

24 Q. What is that?

25 A. My opinion is that pressure testing over

1 the duration of time that we test those wells,  
2 adequately assures that well casing has integrity. I  
3 base that opinion on the fact that we have -- we  
4 literally tested hundreds of wells in the Kingsville  
5 Dome area and productions areas 1, 2 and 3. And wells  
6 constructed with these specifications and tested in  
7 this way have not shown an instance of having a  
8 problem.

9 Q. Does your opinion also reflect  
10 consideration of the operating history of the wells  
11 which served as extractors and injectors in PAA3  
12 during the time it was produced as a mining area?

13 A. Yes. As I had said in my rebuttal  
14 testimony, I believe, or it may have been in my  
15 prefiled straight testimony, that PAA3, essentially,  
16 it's a unique situation where we have had an actual  
17 test in PAA3 of all of the standards which the PAA is  
18 designed for. And one of those be -- would be  
19 pressure tests.

20 There, we pressure tested the wells and  
21 then -- well field 9 and 10 as the company calls them  
22 -- they've operated. And with that, we have had --  
23 not had an instance of a problem.

24 Q. Do you know whether the company  
25 contemplates the installation of additional well



1 fields, as you call them, within production area 3 if  
2 the production area authorization is issued?

3 A. Yes. There will be additional well fields  
4 designed in sequence over the development life of this  
5 production area.

6 Q. Where will those additional well fields be  
7 installed relative to the installed well fields in  
8 PAA3, those already installed, and relative to the  
9 boundary of monitor wells which surrounds PAA3?

10 A. As I had said earlier in my testimony,  
11 those well fields will be installed, generally, along  
12 the axis of two mineralized frontal fairways, or  
13 mineralized fairways, as I -- or mineralized zones as  
14 I had indicated by the blue hatched line on  
15 Protestant's Exhibit 1.

16 These well fields will be placed  
17 according to where the ore lies in the subsurface.  
18 That will be determined in concurrent with the well  
19 field placement. In other words, they'll be  
20 delineation and -- of -- of actual ore zone geometry  
21 and well placement in sequence, very close sequence.

22 As -- and -- and that will -- will  
23 continue until, essentially, the last day that  
24 development occurs in production area 3 according to  
25 the time span that is indicated in the mine plan.

1 When completed, I would anticipate that the well  
2 fields will be at a distance of 400 feet from the  
3 monitor wells on all of its sides as it is -- was --  
4 was anticipated and planned for in the design of this  
5 production area.

6 Q. How many production area authorizations  
7 have you sought or secured?

8 A. Approximately 15.

9 Q. How important is the use of centralizers to  
10 confirming or knowing the adequacy or the -- the  
11 adequacy of the seal to be had with the form --  
12 between the well and the formation when you have  
13 experienced with pump testing the same well?

14 A. Well, the -- like many other factors in  
15 designing a well, the centralizer is -- is a piece of  
16 hardware that we use that we believe is useful in  
17 terms of centralizing a casing in the bore hole.

18 However, the definitive proof that  
19 there is no interformational transfer, be it through  
20 formation, imperfections, or be it a long -- a well  
21 bore itself, would be the pump testing that is  
22 completed.

23 Much -- much like the foundation of a  
24 house, plumbers will use various tools and solder and  
25 glues to -- to -- to construct their foundation, but

1 ultimately, they conduct a pressure test of the pipes  
2 to assure that they don't leak.

3 Q. Do you recall being questioned in regard to  
4 whether URI would sample the waste stream going to its  
5 waste disposal well, or wells, by a grab method or a  
6 drip composite method?

7 A. I remember the grab method. I don't think  
8 that -- I think the drip composite may have been  
9 mentioned.

10 Q. What is the method which has been proposed  
11 and used by URI with regard to WDW-247 and 248? And  
12 what is your opinion as to the appropriateness and  
13 adequacy of that technique as against other  
14 possibilities?

15 A. Well, URI obtains samples and -- and I  
16 think that -- that we are -- we all share the same  
17 terminology on a grab basis. In other words, we take  
18 samples over -- depending on what our purpose --  
19 individually out of the waste stream and have the  
20 analysis done. That is the technique that has been  
21 utilized since the beginning of operations at  
22 Kingsville.

23 In my view, it has -- had provided --  
24 represented its samples because -- for -- for a number  
25 of reasons. First, we have a very consistent

1 nonvarying waste stream going into that well. I think  
2 that possibly the technology of a composite-drip type  
3 of sample may be pertinent to a commercial application  
4 where an operator would be bringing in a multitude of  
5 various waste streams from various sources.

6 In other words, they're -- they're  
7 offering a service to various folks that are disposing  
8 of waste and those waste streams vary in composition.  
9 And -- and it may be reasonable there to -- to obtain  
10 samples that -- that show a variance with time. In  
11 the case of our operation, the waste stream is  
12 constant.

13 As I had mentioned earlier today, it's  
14 predominantly the brine coming out of the restoration  
15 progress off of the reverse osmosis unit. It's  
16 continuous, it does not change, and as a result, the  
17 grab samples over an individual sample are very --  
18 give a good prediction of what the waste in that waste  
19 composition would be continuously over the -- over the  
20 course.

21 If one looks at the individual samples  
22 from week to week and month to month, and compares  
23 them, as I have done, one will also see that there is  
24 hardly any changes or any material changes over the  
25 course of time.

1           Q.       Do you recall being presented a line of  
2       questions raising the issue of whether the monitor  
3       wells, which have been installed by URI around  
4       proposed PAA3, were placed in such locations that they  
5       would not serve to monitor because the water in the  
6       zone being monitored, if it became contaminated, would  
7       never reach the wells or wouldn't reach the wells  
8       within any likely time during the course of mining or  
9       restoration?

10          A.       I believe that was in context to a  
11       paragraph -- in reference to a paragraph in my  
12       affidavit, yes.

13          Q.       By that you mean your prefiled direct  
14       testimony?

15          A.       My pre-filed direct testimony, yes.

16          Q.       What is your professional opinion, if you  
17       have one, as to whether the monitor wells are placed  
18       so as to monitor adequately given the rate of -- the  
19       ambient rate and direction of flow of water in the  
20       horizon which is being mined?

21          A.       It's my opinion that the monitor wells are  
22       placed properly at a proper distance from the well  
23       field -- the proposed well field patterns. The  
24       ambient rate comes into play as a comparison of what  
25       water would flow under ambient conditions.

1                   During mining, ambient conditions are  
2   not what we're looking for. During mining, what the  
3   monitor wells are to show is that -- that something  
4   has gone awry in the injection extraction regime and  
5   has caused water to -- to flow outside of the well  
6   field, production well field pattern to a distance of  
7   400 feet. This is a distance that had been  
8   contemplated by the rules and -- and have been  
9   incorporated into this provision.

10                  It's a provision that has been reviewed  
11   at length in the hearing that we -- we had conducted  
12   for the Kingsville Dome project in 1989, and it is not  
13   -- and -- and in the event that -- that something were  
14   to go awry, water would move much faster than 30 feet  
15   per year. And the 400 distance of the monitor well  
16   would be a -- a safe and early trigger that there was  
17   a problem within a well field.

18                Q.     Does the early alarm that you speak of that  
19   would come from a monitor well come from the  
20   determination of the presence of some chemical species  
21   or some change in physical properties of the -- of  
22   what's in the groundwater, or would that come from a  
23   pressure change?

24                A.     Both.

25                Q.     Which would come first?

1           A.       The pressure change would come first.

2       Now, --

3           Q.       Does the pressure change travel in the --  
4       in the ambient conditions of the aquifer at 30 feet  
5       per year?

6           A.       There is no relationship between ambient  
7       flow and the aquifer and -- and the rate of pressure  
8       change.

9           Q.       Is the pressure response, then, more  
10       rapid?

11          A.       Yes. And -- and this is evidenced by the  
12       rate that we see a pressure change in water wells in  
13       our pump tests. If one goes to the pump tests and  
14       looks at the graphics within the production area  
15       authorization application and looks at wells that --  
16       the monitor wells that are at times much farther than  
17       400 feet away from the well that was pumped, you would  
18       see that the response occurs not over the period of  
19       weeks, but over the period of hours.

20                    So if there is a imbalance in a well  
21       field that was to occur as a result of, let's say,  
22       over injection or under extraction, which effectively  
23       are the same thing, it would -- it would show itself  
24       in a well -- well field -- monitor well water level,  
25       essentially, instantaneously. Effectively,

1     instantaneously.

2           Q.     Do you have any notion as to how much later  
3     it would be before any escaped constituents of the  
4     mining solution would be discovered, if -- if mining  
5     solution had escaped and it were not detected and  
6     returned by adjustment of the pumping routine?

7           A.     Well, first of all, the first assumption is  
8     is that -- that URI would monitor water level and then  
9     not take corrective action, and that would be  
10    counterproductive because for all the reasons, not the  
11    least of the fact that -- that excursions are  
12    undesirable and it's -- and it's an event that our  
13    company goes to great lengths to avoid.

14                   It would -- it would not make sense in  
15    terms of production economics to know that a well  
16    field -- that we were not capturing or leach solution  
17    and capturing our uranium values because without  
18    capturing our uranium values, that's the product that  
19    we -- we sell and we have a economic interest in  
20    maintaining the leach solution control and maintaining  
21    our leach solution to the production well and not the  
22    monitor well.

23           Q.     But maybe you're making the assumption --

24           A.     And the answer to your question -- let me  
25    finish.   The -- the answer to your question would be,



1 it depends. If -- if it was a -- a gross neglect with  
2 injection that wasn't being captured by this  
3 extraction, a hypothetical gross overinjection, I  
4 would expect that the rate that water would flow from  
5 an injection well to a monitor well would be quite  
6 rapid, and it would be a matter of weeks or a few  
7 months before it would show up in -- in extraction --  
8 in a monitor well.

9           Again, if there's no absolute, it would  
10 depend on the situation, but it would be relative --  
11 relatively rapid and certainly not the rate of 30 feet  
12 a year, which is the ambient flow.

13           Q.     Now, suppose that a well field, such as one  
14 of those two well fields 9 and 10 in PAA3, were  
15 neither in production nor restoration, and suppose  
16 that there were no bleed on that well field, what  
17 would -- what would you expect to be the maximum rate  
18 of flow of whatever material was in the groundwater in  
19 that well field under those conditions?

20           A.     In other words, if -- if -- in a standby  
21 type of situation where there was no injection and no  
22 extraction?

23           Q.     Exactly.

24           A.     And ultimately, there what you have is you  
25 have a naturally balanced well field. And that would

1 mean that groundwater flow would be at what we  
2 calculated, at about 30 feet per year.

3 Q. Why does groundwater flow to the northwest  
4 when the Coast is the other direction, is off to the  
5 east?

6 A. I mentioned earlier in response to -- to  
7 Judge Keeper's questions, that in the deeper zones  
8 where there is -- is not a -- a situation pumping  
9 stressing the outward, that -- that groundwater would  
10 naturally flow into the Coast. That is the regional  
11 geologic structure.

12 And regionally speaking, the same would  
13 be for all aquifers along the Gulf Coastal plain.  
14 That regionally groundwater flows from the area of  
15 recharge, which in this case, is to the west -- I  
16 mentioned Duval County and -- and the case of the  
17 Goliad -- down dip to the area of -- along the -- the  
18 geologic plain. That is the regional setting.

19 At Kingsville, in Kingsville Dome area,  
20 locally, that pump gradient has been reversed by man.  
21 And that reversal has occurred, of course, because the  
22 city of Kingsville pumps a fairly substantial amount  
23 of water, groundwater, from the aquifer and has caused  
24 a localized cone of depression.

25 And this is a matter that -- that --

1     that there was tremendous discussion. And we have --  
2     have a lot of evidence placed in the record on this  
3     issue, in 1989, when we dealt with that localized cone  
4     of depression.

5           Q.     Following the direction from the mine  
6     center of PAA3 to the north and west, do you recall  
7     being asked questions about the construction of wells  
8     90 and 91?

9           A.     I do.

10          Q.     Or were those monitor wells?

11          A.     Yes, they were.

12          Q.     All right. What happened with their  
13     construction that calls your attention to?

14          A.     Mr. Kier, in his affidavit or his prefiled  
15     testimony, noted 91 and 90 had the screens were set  
16     too low. As a result -- as a result of all the -- the  
17     materials that Mr. Kier submitted, or Dr. Kier  
18     submitted, we went and we reviewed our records.

19                   And in this instance, we found that  
20     yes, the screens were set too low, and we went back  
21     and tagged those screens and rechecked them, assured  
22     that our records were correct. By "tag" that means we  
23     have a -- a special type of truck with pipes that can  
24     go down and -- and do a measurement at where the  
25     screen is, and we confirmed that they were too low.

1 And as Mr. Grant, our reservoir engineer will testify  
2 later in this hearing, we are undergoing corrective  
3 action of that situation right now.

4 That -- while that -- those wells have  
5 shown to be responsive in the pump testing, and we  
6 have had not -- we have not had any issues in getting  
7 good quality samples through our monitoring program  
8 from those wells, they yield good water. We think  
9 it's prudent to reset the screens.

10 Q. Does the discovery that the screens were  
11 set where they were instead of where you wanted them  
12 to be, render any of the data that have been generated  
13 through those wells, suspect or wrong or required you  
14 to set them aside?

15 A. With the casing and the screen set the way  
16 it is, it's set up into the impermeable shale, so that  
17 the water that the wells are yielding would be water  
18 from the -- the Goliad formation. And, you know,  
19 again, and I will repeat, the fact that the pump test  
20 had shown that we had good communication and the fact  
21 that the wells are yielding water, the water can only  
22 come from where the formation is.

23 Yet, we believe that having had it  
24 brought to our attention and having the mechanical  
25 abilities to -- to put a blank screen in the

1 shallowest areas and then reset the screen, that it's  
2 a prudent thing to do.

3 Q. Do you recall being questioned by  
4 Mr. Valdivia over whether or not URI followed TCEQ  
5 guidance in regard to pump testing?

6 A. I do.

7 Q. What is the role of TCEQ guidance, in your  
8 mind, in URI's planning and operations?

9 A. Well, my understanding of guidance in  
10 general, and -- and I think I may have mentioned in my  
11 testimony, I wasn't exactly familiar with what  
12 guidance he was referring to, but guidance in general  
13 is just that, it's guidance. It's not a rule.

14 Generally, guidance is provided  
15 broadly, and our role as -- as a operating company  
16 with professionals who conduct operations is to run  
17 tests based on our best professional opinion to show  
18 the type of information that we -- we need to put --  
19 put together the kind of information that we need to  
20 demonstrate what we're trying to show.

21 Guidance is just that. It's  
22 not guiding -- it's -- it's -- guidance is not a rule,  
23 and I don't believe we're bound to guidance,  
24 especially where there may be components of that  
25 guidance that are not applicable to our type of

1 endeavor.

2 Q. Do you have an understanding as to whether  
3 TCEQ guidance is meant as a substitute for sound  
4 engineering or professional geoscientist judgment?

5 A. I do not believe that TCEQ guidance is to  
6 replace the judgment that we have as -- as  
7 professionals who work at the site and understand the  
8 situation at the site.

9 Q. Do you recall being asked by Mr. Valdivia  
10 questions about the expected life of PVC pipe and the  
11 appropriateness of its use for installations that  
12 might call upon it or rely upon it for longer than  
13 four or five years?

14 A. I remember those general questions, yes.

15 Q. Do you -- do you have a professional  
16 opinion as to the suitability of PVC pipe for the uses  
17 to which URI has put it and will put it in PAA3?

18 A. Yes, I do. PVC pipe is highly suitable for  
19 our application. It is highly suitable because it is  
20 corrosion resistant, or actually, corrosion proof. It  
21 meets the engineering specifications that are required  
22 at the depth that we're enplacing wells.

23 In other words, the collapsed strengths  
24 and the bursting strengths of the pipe are such that  
25 they both exceed any potential application. And PVC

1 pipe left out of the sunlight, if you will, is inert  
2 and will last indefinitely once placed and cemented in  
3 place.

4 Q. Don't these PVC pipes when used, extend,  
5 however, out of the ground and into the sunlight?

6 A. There are casings that extend two, three --  
7 one, two, three feet out onto the surface of the  
8 ground. And as I had said a second ago, there are  
9 reports that sunlight can cause a brittleness to pipe.  
10 But our -- part of our maintenance routine in our  
11 operation would be to watch. We can see the surface  
12 of the pipe and see if it's broken.

13 In fact, a fairly common and -- and  
14 routine maintenance procedure is to replace wellheads  
15 with new materials from time to time. But that does  
16 not affect the integrity of the well below the  
17 surface.

18 Q. When you were describing the operation of  
19 the reverse osmosis unit, I became confused with the  
20 mention of process water passing through the RO unit  
21 and product water being one of two streams resulting  
22 from the R -- going through the RO unit. Can you  
23 restate that?

24 A. Let me -- let me state some basic  
25 definitions. First, when I say process, I will refer

1     that RO process is a process, and that's the last I'll  
2     use process. Water going into the RO unit, water  
3     coming out of, let's say, during restoration, the well  
4     field, would be feed water, to be clear. It will be  
5     water that is fed into the RO unit. It is untreated  
6     feed water.

7                     Running through the filtration process,  
8     the water is pressed under high pressure through RO  
9     membranes. The water that is pressed through the  
10    membranes and filtered will be product water. It is  
11    water that much of the dissolved ions that were  
12    contained in that water had been filtered out and that  
13    water is returned to the well field, and that is  
14    product water.

15                    What remains is what is called reject  
16    water. Reject water would be the water that now all  
17    of the ions that were contained in 100 percent of the  
18    water, most of them have been reconcentrated in a  
19    smaller volume. And that water is designated the  
20    reject water, or it's rejected from the reverse  
21    osmosis unit.

22                    So again, to restate it, it's feed  
23    water, water fed in, product water, that's the clean  
24    water that is produced from that reverse osmosis unit.  
25    And reject water, that is the waste water, if you



1 will, that has been rejected from the RO process, RO  
2 processing of water, which is destined for waste  
3 disposal.

4 Q. How long, Mr. Pelizza, have you been  
5 monitoring or assisting URI in matters of compliance  
6 with environmental and health or safety regulations?

7 A. With URI, I have been involved in  
8 compliance and overview and responsibility for  
9 compliance since August 8th of 1980. That was my  
10 first day on the job.

11 Q. Is your experience in this connection  
12 stated in your resume?

13 A. I mentioned in my resume, I --

14 Q. Excuse me. I don't want to make you  
15 recapture it at this --

16 A. Yes. Yes.

17 Q. All right. A question was raised as to the  
18 use of the term "gradient". Can you -- have you used  
19 it to refer to pressure or a surface or both, and can  
20 you simply lay that out for us so that we need not be  
21 confused by it further?

22 A. Possibly it would be more -- more clear if  
23 I -- a gradient is a pressure gradient in -- for --  
24 for water in a formation. As I had mentioned, the  
25 most aquifer is the Goliad aquifer is the aquifer that

1 we're interested in here, but even the shallower  
2 zones, which in PAA3, the shallower zone may not be  
3 Goliad, it may be Beaumont formation or artesian.

4 What that means is is that the water in  
5 the aquifer is under pressure, artesian pressure, and  
6 when one drilled piezometers and -- and they could be  
7 monitor wells that serve as piezometers, any -- any  
8 --

9 Q. Would -- would you spell the word  
10 "piezometers" for the court reporter?

11 A. That's a dirty trick.

12 Q. Would you accept P-I-E-Z-O --

13 A. P-I-E-Z-O-M-E-T-E-R.

14 Q. Okay. Go ahead, please.

15 A. It -- it -- whether they be monitor wells  
16 or whether they be wells that are just used to measure  
17 fluid levels -- monitor wells can double up for either  
18 purpose -- if one were to measure over a given area,  
19 the water level to which water would rise in  
20 individual monitor wells and record that, and then  
21 contour those water levels, those water levels would  
22 indicate the pressure gradient within a given aquifer.

23 So they do not reflect the dip, if you  
24 will, of the geologic formation. They reflect the  
25 water level for -- the -- the level to which the water

1 is in the aquifer. And based on that water level,  
2 that indicates which direction the gradient,  
3 ultimately, the flow of the water is under ambient  
4 conditions.

5 Q. We know these aquifers are -- that you're  
6 speaking of -- have formations over them which seal  
7 them. But here above -- none of them comes up above  
8 the level at which it's sealed. Are you speaking of  
9 an implicit or virtual surface as opposed to an actual  
10 surface?

11 A. Yes. It would be a pressure surface that  
12 could only be monitored by penetrating the overlying  
13 zones and measuring the water level to which it  
14 comes.

15 Q. You have testified as to the occurrence of  
16 uranium varying compounds in the ore zone. And on  
17 some occasions you have testified, have you not, that  
18 they're fixed in place, and on other occasions, you  
19 speak of them as being soluble? How do you account  
20 for the fact that they, you know, spoke of them both  
21 -- spoken of them both ways?

22 A. Well, I don't remember both -- both -- the  
23 context of both, but I can address that subject.

24 Uranium is naturally occurring in the  
25 subsurface in these mineralized zones. In the natural

1 state, the -- the -- and uranium -- let me back up a  
2 little bit. Uranium and radioactivity is everywhere.  
3 Uranium is one of the -- is one of the more abundant  
4 elements in the earth crust, and uranium is  
5 everywhere. Radioactivity is everywhere. We're  
6 exposed to it right now. Uranium in the water  
7 adjacent to uranium ore bodies, is -- is present.

8 Now, if -- if one were to go in under  
9 natural conditions and say, let's go ahead and produce  
10 the uranium that naturally exists in the uranium ore  
11 body, well, the concentrations wouldn't be high enough  
12 because it's -- it's only present in -- in minor  
13 concentrations. Yet, if one were to look at these  
14 concentrations of uranium and uranium-related  
15 products -- because uranium is a radioactive substance  
16 and being radioactive, it's always breaking down into  
17 new elements, many of which we talked about, I've  
18 addressed in my -- my prefile, and I think we've  
19 mentioned in this hearing over the past day or so --  
20 they are present in the water and around uranium ore.  
21 They may not be of economic value, but certainly  
22 they're there and it's one way of comparing these  
23 values with drinking water standards.

24 One would have to conclude that the  
25 water in and around uranium ore does not meet drinking

1 water standards for consumption. What we do in our  
2 business is we, essentially, take the uranium ore  
3 that -- that is largely -- maybe this is where you're  
4 coming in this question -- largely insoluble, add  
5 oxygen and rust the ore. In rusting the ore, the  
6 uranium becomes soluble and it allows us to extract it  
7 and pump it to the surface and remove it from the  
8 rock.

9 Q. Are you referring to a process in which the  
10 valence of uranium has changed?

11 A. Yes.

12 Q. Does the state of the valence of the  
13 uranium in the ground have to do with where it is  
14 deposited?

15 A. Yes.

16 Q. What's the connection?

17 A. As I had said, in the oxidized form,  
18 uranium is soluble. The way these ore bodies were  
19 enplaced is uranium was allowed to enter with  
20 groundwater during aquifer recharge, Duval County,  
21 West Texas. In the oxidized state, plus six valent  
22 state, uranium is able to complex with carbonate ions,  
23 which were also very -- also plentiful in -- in these  
24 waters, and form uranyl tricarbonatate.

25 In doing so, it's a soluble compound.

1 It's the same compound that we produce in the mining  
2 process. And the water is allowed to migrate down dip  
3 with the regional groundwater flow over geologic time.  
4 In our process, or in our -- in these ore bodies, such  
5 as these, we have a zone for one reason or another.  
6 In the case of South Texas, it's usually associated  
7 with an oil field and faulting associated with an oil  
8 field, and faulting that comes up to the shallower  
9 sediments, which allows a reductive gas to enter into  
10 the groundwater in and around in the shallower  
11 sediments.

12 At Kingsville, for example, if one were  
13 to go to a water well on top of the Kingsville Dome,  
14 and the Kingsville Dome is the geologic structure,  
15 which is allowed -- caused faulting and allowed  
16 reduction of gas into the shallower sediments there,  
17 water that one would get from there would smell like  
18 rotten eggs, and that's hydrogen sulfide gas and it  
19 exists in the water on the reduced side.

20 Water traveling down gradient from the  
21 recharge in the oxidized form, the uranium would be  
22 soluble, and when it encounters the reduced sediments,  
23 the oxygen is consumed, the valent state of the oxygen  
24 of the uranium changes. And at that point, it becomes  
25 insoluble. And over geologic time, this process

1 continues and water continues to pass from the  
2 oxidized to the reduced -- encounters the reduced  
3 interface, the -- it's called a redox interface --  
4 and it -- it builds and concentrates into a level that  
5 is uranium ore. That contact would represent each one  
6 of the two, what I call mineral fairways in PAA3.

7 In that area, and only in that area,  
8 you generally have uranium, of course, in the rock,  
9 and you have uranium and uranium-related minerals in  
10 the water. Generally speaking, on the oxidized side  
11 of the front, you'll have slightly more uranium  
12 because the uranium is -- is slightly more soluble in  
13 the natural state there.

14 Q. Do you recall answering questions with  
15 regard to how you determined when -- how the company  
16 would determine when it believed restoration had been  
17 completed?

18 A. Yes.

19 Q. Are you aware of URI having committed to  
20 satisfy more than the standards imposed by the  
21 restoration table of PAA3, but a higher standard in  
22 connection with the -- an agreement with Kleberg  
23 County?

24 A. Yes.

25 Q. Would you describe briefly either what you

1 recall of that or point to the agreement?

2 A. I'll describe it in general, and if someone  
3 wants to go to more detail in the agreement, I will.

4 The -- the TCEQ rules specify the  
5 various provisions for groundwater restoration and --  
6 and criteria. What we have agreed to with -- with the  
7 County in part of our settlement agreement, is to  
8 restore wells at the Kingsville Dome Mine, that on a  
9 well-by-well individual well basis, rather than an  
10 average basis is what -- with what the rules  
11 contemplate, that if a well met drinking water  
12 standards before mining were to occur, then we will  
13 restore that well to drinking water standards after  
14 mining is completed.

15 If that well did not meet drinking  
16 water standards before mining was to occur, then we  
17 would not be required to restore it to drinking water  
18 standards and the default would become standards that  
19 are required by TCEQ rules.

20 Q. Does that mean URI has bound itself to the  
21 more stringent of the two standards?

22 A. That is correct.

23 Q. In that connection, has URI also agreed to  
24 drill any additional wells, monitoring wells?

25 A. In the agreement?



1 Q. Yes.

2 A. URI has not agreed to drill additional  
3 monitoring wells, but we have agreed to conduct  
4 existing water level monitoring using recording  
5 devices on additional wells that are not provided for  
6 any, either our permit or the production area  
7 authorization.

8 MR. HILL: All right. Pass the  
9 witness.

10 THE COURT: Take a short break?

11 MR. VALDIVIA: Please.

12 (Brief recess.)

13 RECROSS-EXAMINATION

14 BY MR. VALDIVIA:

15 Q. Mr. Pelizza, in your redirect testimony,  
16 you use the term "mineral fairway" to describe the two  
17 areas in PAA3 where -- which contain uranium suitable  
18 for mining. Do you recall that testimony?

19 A. Yes.

20 Q. Now, those fairways, do they correspond  
21 with the blue hatchmarked lines that you drew on  
22 Protestant's Exhibit Number 1?

23 A. Yes.

24 Q. And you also testified that during  
25 production, the process of injecting and extracting

1 fluid creates a situation, which I'll say liquid moves  
2 more rapidly than it would normally move through the  
3 ground; is that correct?

4 A. Yes.

5 Q. And it would be a lot more rapid by several  
6 orders of magnitude than the water -- the liquid flow,  
7 the ambient liquid flow of 30 feet per year, is  
8 that...

9 A. Thirty feet per year. What I'm thinking  
10 about is orders of magnitude.

11 Q. Yes. If you could give me an idea.

12 A. I'd have to -- I won't say yes to orders of  
13 magnitude. I'd have to go do some calculations, but  
14 yes, much more rapidly.

15 Q. Would it take long to do a calculation?

16 A. Yes.

17 Q. Okay. I may ask you to do that on a break.

18 MR. VALDIVIA: Would that be all right  
19 with, Your Honor and Mr. Hill, rather than take up  
20 time on recross?

21 MR. HILL: I'd have to ask my witness  
22 what was entailed because I don't know, but what -- he  
23 would have to actually go the plant and run the matter  
24 on a -- find an element model because I expect that  
25 that is not something that is just a matter of

1 cranking out some differential equation. It's  
2 probably necessary to model it to be -- to get the  
3 appropriate number. And I mean, I don't know, that's  
4 what I'm expecting without --

5 MR. VALDIVIA: I -- inadvertently  
6 making this longer, I'm trying avoid that.

7 MR. HILL: I understand.

8 MR. VALDIVIA: I would like to have  
9 some base rather than something --

10 A. Well, orders of magnitude is very big, and  
11 off the cuff, that sounds much larger than it really  
12 is, but if you ask me the question a different way,  
13 maybe I could.

14 BY MR. VALDIVIA:

15 Q. Well, you testified that, for example,  
16 there is 400 feet between the north monitor well ring  
17 and that line of production wells just to the south.  
18 Do you recall your testimony?

19 A. Yes.

20 Q. And was it your testimony on redirect that  
21 that 400 feet could be reached in a water of weeks?

22 A. I think I said it would depend, but I --  
23 and I think I said weeks or months. Certainly, you  
24 know, depending on how egregious the overbalance was  
25 or underbalance, whatever the overextraction in the

1 area.

2 Q. By way of comparison at 30 feet a year,  
3 about how long would it take for liquid to travel at  
4 400 feet?

5 A. Well, by straight math, it's 30 divided by  
6 400, so you know, 12 years.

7 Q. Twelve, 13 years. Now, I'll try to use  
8 your terminology. We'll call the area where you  
9 presently have injection and extraction wells the  
10 north mineral fairway?

11 A. Okay.

12 Q. Now, for the north mineral fairway, you  
13 only have monitoring wells on the north side to the  
14 north within 400 feet; is that correct?

15 A. That's correct.

16 Q. So fluids that are traveling south of the  
17 north mineral fairway, do not reach any monitoring  
18 wells within 400 feet, do they?

19 A. No.

20 Q. And that's because there are no wells in  
21 that central portion to the south of -- in that  
22 central portion between the two mineral fairways; is  
23 that right?

24 A. That's correct.

25 Q. And for the life of this -- the mine in

1 PAA3, that area will never be monitored; is that  
2 correct?

3 A. I won't say never. You know, at this  
4 point, we have not even -- we have not finished all of  
5 our delineation of the ore to know how far south that  
6 fairway will swing. But at this point, there is no  
7 plan to put additional monitor wells, some sort of new  
8 category of monitor wells inside of the production  
9 area, no.

10 Q. Now, you have identified two mineral  
11 fairways that have one outer monitor well ring around  
12 there. Could URI, if it decided to, have two rings,  
13 one around each of the fairways?

14 A. The difficulty that you would likely  
15 encounter there is you would reach certain areas where  
16 the fairways would begin to encroach each other.

17 Q. But at this time, URI does not know that;  
18 is that correct?

19 A. What URI knows is that there's two mineral  
20 fairways there. What URI knows is that as delineation  
21 is done, the rule is is that things meander, and that  
22 it's highly likely that a meander would go north from  
23 the south or south from the north. And what's known  
24 is we are encircling the entire area in the production  
25 area and monitoring it. We believe that using this

1 approach much like the last production area where we  
2 had a number of zones, it worked very well, and it's  
3 safe.

4 Q. I think my original question was -- I'll  
5 try and rephrase it. Could URI have two monitoring  
6 well rings, one for each mineral fairway?

7 A. Obviously, wells could be drilled and put  
8 in the ground and mechanically it could be done.

9 Q. So your answer is yes?

10 A. Mechanically it could be done.

11 Q. And is there any regulatory reason why URI  
12 could not do that that you're aware of?

13 A. No. I don't believe there is any  
14 regulatory reason why we couldn't do it. Conversely,  
15 there's no regulatory reason that we can't do it the  
16 way we're doing it either.

17 Q. Is the reason URI decided on this configure  
18 of monitor well rings is to save money?

19 A. I think that the reason is it would save  
20 money, it wouldn't waste money, but we didn't see the  
21 monitor wells were necessary. And we looked at what  
22 was required from the logical production unit in terms  
23 of potential resources and size of the area, and this  
24 is what made sense from production planning for a  
25 logical production unit.

1           Q.       You mentioned -- and again, I'm not sure if  
2 I heard you right, but -- so correct me if I'm wrong.  
3 You testified about faulting associated with oil  
4 fields?

5           A.       Uh-hum.

6           Q.       Could you explain what you mean by that?

7           A.       The Kingsville Dome, which is north and --  
8 north and east of here is a structural dome, and it's  
9 been reported that there is deep-seating faulting  
10 associated with the Kingsville Dome that allowed for,  
11 essentially, reductant gas to be present in overlying  
12 sediments.

13          Q.       Okay. And when you said north and east of  
14 here and you looked at Exhibit 1, you meant north and  
15 east of the production area 3?

16          A.       Yes.

17          Q.       And by faulting, do you mean like cracks in  
18 the rock or sand? What do you mean by faulting?

19          A.       Faulting is faulting. It's displacement in  
20 stratigraphic horizons in the sand, yes.

21          Q.       Now, would a liquid in a fault travel along  
22 the fault line?

23          A.       Hypothetically?

24          Q.       Yes.

25          A.       I think there's all kinds of faults, and

1     you know, there is the potential in a fault that you  
2     could have interformational transfer.

3           Q.     And you're saying that uranium is often  
4     found in areas associated with oil fields; is that  
5     correct?

6           A.     Most of the uranium in South Texas was  
7     discovered as a result of radiation shows in the  
8     shallower sediments during oil and gas exploration.

9           Q.     So is there -- the mineral fairways in  
10    PAA3, are you aware of any faults in that area?

11          A.     No. We have found no evidence of faulting  
12    in production area 3.

13          Q.     When you were describing a process of  
14    extracting uranium, I believe you use the phrase "rust  
15    the ore"?

16          A.     Uh-hum.

17          Q.     By that, did you mean oxidizing?

18          A.     I did.

19          Q.     And when you rust the ore, you create  
20    uranium oxide; is that --

21          A.     That is correct.

22          Q.     Okay. Basically, you change the chemical  
23    composition of the uranium from what it would be  
24    naturally into a rusted form?

25          A.     I wouldn't say to change the chemistry.



1 Change the oxidation potential or the valent state of  
2 the uranium. It's still -- uranium is naturally  
3 uranium. You know, it, itself, is not changed. Now,  
4 if the valent state is changed and it has become more  
5 soluble, it's a lot to complex with different  
6 elements, which will, you know, forms uranyl  
7 tricarbon.

8 Q. But at that time, it's the uranium -- the  
9 rusted ore is different from the uranium that remains  
10 in the sands that doesn't have lixiviant injected?

11 A. Yes, it becomes more soluble. That is the  
12 mining process.

13 Q. And you'd mentioned when you do water  
14 sampling, when -- one of the sampling processes you  
15 described as being a chemical --

16 A. Yes.

17 Q. -- process. Is what you're checking for is  
18 the presence of uranium oxide?

19 A. We measure it as natural uranium, but we do  
20 measure uranium as an individual element as one of our  
21 controlled parameters, yes.

22 Q. Can you tell whether the uranium that's  
23 present in the sample is naturally occurring? Can you  
24 distinguish between naturally occurring uranium and  
25 rusted uranium?

1           A.       Well, all uranium is naturally occurring  
2     uranium in our area. By definition it's natural  
3     uranium. There is no distinction that I know of  
4     between uranium that is naturally -- that we have had  
5     wells in our baseline wells, premining wells, where  
6     uranium values were almost as high, not very many, but  
7     a few, as uranium values after oxygen was added.

8           Conversely, we have had wells where we had  
9     oxygen and the uranium doesn't oxidize, and it doesn't  
10    respond very well, and it looks very much like uranium  
11    values in the native state, and you cannot tell the  
12    difference between the two.

13          Q.       Do you have a way of determining whether  
14    uranium in a sample of water is there as a result of  
15    the mining activity?

16          A.       The answer to your question is once the  
17    uranium is soluble in water, whether it's a result of  
18    mining or whether it's a result of natural occurring,  
19    it's soluble for all the same reasons and it looks  
20    exactly the same.

21          Q.       So the answer is no?

22          A.       The answer is no.

23          Q.       So Mr. Hill, in his opening statement,  
24    offered up the argument that uranium in the Garcia  
25    Hill wells was naturally occurring. Do you recall

1     that?

2           A.     I do.

3           Q.     And your testimony just now, if I  
4     understand it, is that there's really no way to tell  
5     whether that uranium had been there for millions of  
6     years as Mr. Hill contends, or was there as a result  
7     of the mining activity; is that correct?

8           A.     I'd say the answer to that is no.

9           Q.     There's no way to tell?

10          A.     There's no way physically possible if the  
11     mining activities could have resulted in any uranium  
12     in Mr. Garcia's well.

13          Q.     Well, that wasn't my question. My question  
14     was: There's no way you can distinguish it, the  
15     two -- if uranium is in a water sample, you cannot  
16     tell us that that is there because it's always been  
17     there by natural processes or that it's there because  
18     of mining, can you?

19          A.     When one looks at a water sample, including  
20     uranium, and wants to determine if that water sample  
21     has been impacted by mining, I would look at the  
22     uranium and a number of other parameters that are  
23     associated with mining because they would have to be  
24     there as a suite if they're associated with mining.  
25     So there are other indicators that would give you your

1 answer.

2 Q. You testified that the northwest flow of  
3 water in production area 3 is the result of pumping by  
4 the city of Kingsville. Do you recall your  
5 testimony?

6 A. Yes.

7 Q. Now, the pumping in the city of Kingsville  
8 of water out of the city of Kingsville is sufficient  
9 to change the direction of flow in the groundwater, am  
10 I right?

11 A. Yes.

12 Q. Is the rate of flow, the ambient rate of  
13 flow, affected by the pumping by the city of  
14 Kingsville?

15 A. Yes.

16 Q. So in drought years, assuming there will be  
17 more pumping by the city, the rate of flow would be  
18 increased; is that right?

19 A. I don't have any knowledge to lead me to  
20 answer on that.

21 Q. Assume that the city of Kingsville is  
22 pumping more water than it usually would, would that  
23 increase the rate of flow? Would you expect it to  
24 increase the rate of flow in PAA3, for example?

25 A. PAA3 is at some distance from Kingsville

1 and it's -- I just don't have any -- you know, we have  
2 calculated the rate of flow based on the actual  
3 gradient in the area. That gradient is a result of  
4 not one and not ten, but many years of pumping by the  
5 city of Kingsville. So I would presume that all that  
6 is factored in to the empirical of water -- the water  
7 levels and the evidence that we're measuring empirical  
8 evidence in the field.

9 I have no reason to come to a  
10 conclusion that one year of drought or one year of  
11 intense rainfall would impact the gradient that has  
12 resulted over years of mining of the water one way or  
13 another.

14 Q. Would you expect -- I understand you're  
15 talking about an average over time more than one year,  
16 is that fair to say when you're determining the --

17 A. No. Well, I'm saying that we haven't seen  
18 any measurable change in gradient over the years that  
19 we monitor water levels.

20 Q. I'm asking a hypothetical, though. Would  
21 increased pumping by the city of Kingsville over time  
22 increase the flow, the ambient flow of water?

23 A. It's logical to assume that if there's a  
24 tremendous increase in pumping, that that would  
25 increase the gradient to some degree, hypothetically.

1 Or conversely, if there was a decrease in pumping, it  
2 would decrease the gradient.

3 Q. Mr. Hill asked you a series of questions  
4 about spacing of monitoring wells in the overlying  
5 sands, and I'm going to ask you a few more questions  
6 about that as well.

7 Now, it was your testimony that in the  
8 overlying sands, you -- well, strike that. It's --  
9 you have 25 wells, overlying sand wells in PAA3; is  
10 that correct?

11 A. (Nods head.)

12 Q. Is that a yes?

13 A. Yes. I'm sorry. Yes.

14 Q. And of those, eight are in the 400-foot  
15 sand; is that right?

16 A. That's my recollection, yes.

17 Q. And 17 are in the 250-foot sand?

18 A. Yes.

19 Q. Okay. And I believe you agreed with  
20 Mr. Hill that the 400-foot sand does not extend over  
21 the entire production area 3?

22 A. I don't know if I agreed with Mr. Hill, but  
23 that's my independent opinion.

24 Q. Well, he posed the question and you said  
25 yes. I -- so the 400-foot sand, from what I recall in

1 your prefile, that tends to be in the southern --  
2 where the southern mineral fairway would be; is that  
3 right?

4 A. More or less.

5 Q. More or less is all I'm asking for. And so  
6 north of there in the northern mineral fairway, the  
7 the 400-foot sand peters out some, and the first  
8 overlying sand is a 200-foot sand; is that right?

9 A. Yes, 250.

10 Q. 250. Thank you. Okay. Now, yesterday we  
11 talked a little bit about those eight wells in the  
12 400-foot sand, and assuming that's the first overlying  
13 sand, the spacing requirement is one every four acres.  
14 You recall that?

15 A. Uh-hum.

16 Q. And I believe you agreed with me that that  
17 means that those eight wells are spaced to cover 32  
18 acres?

19 A. That was your words, but yes,  
20 approximately.

21 Q. Okay. You could pack the wells to cover  
22 less acreage; is that right?

23 A. They're evenly spaced. You can look at the  
24 map and see that they're evenly spaced.

25 Q. Okay. So -- and the production area is 94

1     acres overall; is that right?

2           A.     Approximately.

3           Q.     That leaves you with another 62 acres,  
4     which if you were to cover those with monitor wells in  
5     the first overlying sand, you'd need 15 wells; is that  
6     right? Fifteen and a half, but rounded down?

7           A.     Approximately.

8           Q.     Okay. And those 15 wells would have to be  
9     in the 250-foot sand?

10          A.     If you were defining that as the first  
11     overlying aquifer.

12          Q.     So if you had fewer than 15 250-foot sand  
13     wells, which were in an area where the 250-foot sand  
14     is, the first overlying aquifer, you would not be in  
15     compliance with the spacing requirements, would you,  
16     of one every four acres?

17                   MR. HILL: Objection.

18     Mischaracterization of the rules.

19                   MR. VALDIVIA: I'm not sure if that's  
20     correct, but...

21                   THE COURT: Mr. Hill, could you clarify  
22     your objection?

23                   MR. HILL: Yes. The rule requirement  
24     is one per so many acres or in the alternative, and  
25     that's been -- it's on the record, and the question



1 is predicated on the assumption that the rule is not  
2 written in the alternative, but flatly requires  
3 something, which it does not state.

4 THE COURT: Care to respond?

5 MR. VALDIVIA: My response is I was  
6 talking about the spacing requirement as it's written  
7 in the rule, and I can see that it's one every four  
8 acres or what the executive director allows a company  
9 permit to utilize. But I was trying -- I was simply  
10 running the numbers to get some kind of agreement  
11 assuming -- let's assume there's no executive director  
12 dispensation, I'm just trying to get an idea of how  
13 many wells would be needed to cover these 62 acres.

14 THE COURT: Okay. Well --

15 MR. HILL: We have no objection of the  
16 witness dividing 62 by 15.

17 THE COURT: I think that's where we're  
18 headed.

19 MR. HILL: Or four or whatever the  
20 answer is.

21 THE COURT: Okay. The objection is  
22 overruled and you may proceed.

23 BY MR. VALDIVIA:

24 Q. So you would need 15 wells in the remaining  
25 62 acres in order to comply with the rule

1 requirements? One well for every four acres in the  
2 first overlying sand; is that right?

3 MR. HILL: Same objection.

4 THE COURT: You may answer.

5 A. If this were a pure simple line in the sand  
6 analysis, you are correct, but it is not --

7 BY MR. VALDIVIA:

8 Q. Thank you.

9 MR. HILL: Your Honor, the witness is  
10 entitled to complete his answer. His was given a  
11 hypothetical, and if he were given a straight fact  
12 question, that would be a different matter. He was  
13 asked a hypothetical, what if, with a compressed or  
14 implicit restatement of the rule. I think he's  
15 entitled, at least to finish his sentence or two to  
16 explain why he said what he did.

17 THE COURT: Do you have any objection  
18 to his explaining his answer?

19 MR. VALDIVIA: I believe my question  
20 was a yes or no.

21 THE COURT: You can recover those  
22 statements that he was about to make on cross -- or  
23 excuse me -- redirect. So go ahead.

24 BY MR. VALDIVIA:

25 Q. You testified on redirect at some length

1     about a 400-foot spacing of monitoring wells. Do you  
2     recall?

3             A.     Yes.

4             Q.     Okay. Now, that 400-foot distance, isn't  
5     it correct that that's a maximum distance in the  
6     rules? It's no -- they must be no greater than 400  
7     feet apart?

8             A.     I believe that's what the rule says, yes.

9             Q.     So the rule allows URI to place the wells  
10    at a closer distance, is that true?

11            A.     Certainly, I think that URI could place the  
12    wells on top of each other if they wanted, but 400  
13    feet is reasonable.

14            Q.     Four hundred feet is the maximum distance  
15    you can place the wells, and that's what URI decided  
16    to do?

17            A.     Yes.

18            Q.     And you testified that, basically, you were  
19    monitoring -- the purpose of the monitoring is  
20    to check to see if something is gone awry, i.e., an  
21    excursion has happened?

22            A.     Right.

23            Q.     So isn't it true that if you chose a  
24    shorter distance than 400 feet, it would detect an  
25    excursion sooner?

1           A.       I don't agree with that, no.

2           Q.       If the excursion has a shorter distance to  
3 travel, it would not arrive at the monitoring well  
4 sooner?

5           A.       I take that back. If it was a hundred feet  
6 closer to the well field, yes, it would be sooner.

7           Q.       You testified about piezometers and your  
8 role in pressure testing; is that right? Like pump  
9 testing?

10          A.       I think what I said was a piezometer was a  
11 sampling point by which we could -- one could monitor  
12 water levels, you know, artesian water levels.

13          Q.       And that was -- the water levels are an  
14 indication of the pressure gradient within an aquifer,  
15 I believe that's what you said?

16          A.       Yes. They will tell you what the pressure  
17 gradient is.

18          Q.       And the reason you're measuring these water  
19 levels is why?

20          A.       Depends.

21          Q.       What would -- is it -- well, give me an  
22 example.

23          A.       If one wanted to build a piezometric  
24 surface map and see what ambient water level was, then  
25 given -- as would PAA3 -- given the amount of monitor

1 locations that are available, one could record those  
2 monitor wells, water level, and build a ambient map of  
3 the piezometric surface.

4 Q. Okay. And in the pump testing, that's  
5 another area where you look at the water levels; is  
6 that correct?

7 A. Yes.

8 Q. And pump testing relates to your proof of  
9 containment; is that right?

10 A. Yes. As I had said, pump testing serves  
11 two fundamental purposes. One is containment, is  
12 isolation from the overlying and underlying zone, and  
13 two, is to show hydrologic continuity with the ring of  
14 monitor wells.

15 Q. And did you testify to the pump testing as  
16 your definitive proof of containment?

17 A. Yes.

18 Q. And all you're looking at is water  
19 levels?

20 A. That is correct.

21 Q. So looking at the water levels is  
22 definitive proof of containment throughout the  
23 production area?

24 A. It's definitive proof that there is no  
25 leakage in the overlying or underlying zone in the

1 production area.

2 MR. VALDIVIA: I pass the witness.

3 RECROSS-EXAMINATION

4 BY MR. REDMOND:

5 Q. What is a screen in a monitoring well?

6 A. What is a screen?

7 Q. Screen.

8 A. A screen is a -- is just what it says. The  
9 casing is the -- is a pipe that is run into a well to  
10 some predetermined distance. Wells are cut into the  
11 formation, whether it be through a number of different  
12 means, but they're opened up into the area where we  
13 want water to flow and that is a well. In the case of  
14 the Kingsville Dome project, and most projects in this  
15 type of environment, the sand will flow with water to  
16 some extent into the well. So it's desirable to place  
17 a screen, which is like a casing, but rather than  
18 being a solid pipe, it's a round shaped screen of a  
19 certain mesh that will hold the sand back and prevent  
20 it from flowing into the pump and ultimately into the  
21 water sample. And that is what a screen is.

22 MR. REDMOND: I have no further  
23 questions. Pass the witness.

24 MS. ROWLAND: Your honor, I have a  
25 couple of questions.

## CROSS-EXAMINATION

BY MS. ROWLAND:

Q. In your prefile, you were talking with Mr. Hill about production areas. And in your prefile, I believe under -- let's see where this is. I guess it's J-5. There is a map of the production areas. Do you have a copy of that?

A. Hold on a minute.

Q. And actually, I believe this is the map only of production area 3. I'm saying production areas. And a map of the well fields within production area 3. I have a preliminary question that I could ask you.

MR. HILL: Oh, J-5?

MS. ROWLAND: Uh-hum. In his prefile.

MR. VALDIVIA: Looks like this.

BY MS. ROWLAND:

Q. Mr. Pelizza, I could ask you just a preliminary question. When you're talking about a production area, you were talking about a surface area, right, in general?

A. Well, it's expressed on the surface as a map, but it would extend to the subsurface in terms of where the production is going to occur.

Q. Would that be the production zone?

1           A.       The production zone would be the zone --  
2     the mineralized zone that the production patterns  
3     would -- the wells would be completed and that would  
4     be produced. So I suppose it's three dimensional.

5           Q.       My real question is: Would a production  
6     area and the production zone be concurrent if you  
7     measured from the surface down through the  
8     subsurface?

9           A.       In other words, if you were to go straight  
10    down more or less.

11          Q.       Would the outline of the production area  
12    define the outline of the production -- what you call  
13    the production zone?

14          A.       For all practical purposes, yes.

15          Q.       What about impractical purposes?

16          A.       Well, I --

17          Q.       I mean, what purposes would it not be the  
18    same?

19          A.       For all practical purposes, yes, I would  
20    say there could be slight deviations in well bores  
21    that may be a matter of inches that would be  
22    different. You know, I'm precise in my explanations.  
23    For all practical purposes, yes, it would be a matter  
24    of well deviation, et cetera, that is almost  
25    irrelevant in terms of what the layperson would be



1 worried about, but for all practical purposes, yes.

2 Q. So they are pretty much the same thing?

3 A. Yes.

4 Q. Okay. Do you have a copy --

5 A. I do.

6 Q. -- of that exhibit? Okay. On that  
7 exhibit, the well fields are marked. And well field 9  
8 and well field 10 are blacked in, and I assume that's  
9 because they have already been produced from --  
10 there's production from those; is that correct?

11 A. Yes, this -- is this -- yes.

12 Q. Okay. And can you now look -- and keep  
13 that -- but can you now look at your prefiled Exhibit  
14 D? And my understanding is this is a timeline for  
15 production of these well fields?

16 A. Hold on a second.

17 Q. Oh, I'm sorry. It's under D, under Tab D.

18 A. I'm looking. I'm looking. Just a minute.

19 Q. And it says updated mine plan?

20 A. Are you referring to the one that was...

21 Q. Yes. Is there a new one?

22 A. It's not new, it's just the way it's  
23 xeroxed.

24 Q. Is it the same -- the same information, but  
25 just in a different...

1           A.       Yeah.  It's landscape --

2                   MR. HILL:  I'm sorry.  Are you asking  
3  me?

4                   MS. ROWLAND:  I'm asking the witness.

5           A.       It's landscape -- well, when the print shop  
6  printed it, it cut off the side in -- in what I saw in  
7  the court records.

8           Q.       Okay.  And has the new plan been admitted  
9  into evidence or is this the latest plan we have to  
10 look at?

11          A.       This is the same, it's just that the copy  
12 in my file wasn't xeroxed wrong.

13                  MS. OBERLIN:  It has not been admitted  
14 into evidence.

15  BY MS. ROWLAND:

16          Q.       Okay.  Well, this is what I have to look  
17 at, so I'm going to have to look at the miscopy.  I've  
18 looked at this, and what I understand is that for  
19 production area 3, well fields 9 and 10 were projected  
20 to be producing between '96 and '99; is that  
21 correct?

22          A.       I'm looking at -- and I think we're looking  
23 at the same figures.  I'm looking at Q3 -- 234 of '98  
24 and Q1 and 2 of '99.  Each box is a Q, quarter.

25          Q.       Okay.  Okay.  So it would go from the

1 second quarter of '96 to the second quarter --  
2 anything after the second quarter of '99; is that  
3 correct?

4 A. I'm on PAA3?

5 Q. No. And I'm sorry. I went up a line.

6 A. A ruler is good.

7 Q. Yeah. I think I need one. Yeah. I'm  
8 sorry. From the second quarter of '98 through the end  
9 of the second quarter of '99; is that correct?

10 A. That's what I see, yes, ma'am.

11 Q. Okay. And that was when well field 9 and  
12 10 were produced. And then the only other thing I see  
13 for PAA3 is projected to begin the first of 2006 and  
14 ending after the second quarter of 2008, and those  
15 would be well fields 11 and -- through 16; is that  
16 correct?

17 A. Yes.

18 Q. Do you know -- are you going to be  
19 producing all -- and that's the entire other side --  
20 the other fairway, I guess, is what you would call it,  
21 from 10 -- 9 and 10; is that correct?

22 A. Well -- and then it appears from this  
23 drawing that there's also two additional ones  
24 delineated on the north side.

25 Q. Right. But those aren't mentioned on this

1 plan estimate as far as I can tell. If it is,  
2 maybe -- I don't know where. Can you tell me?

3 A. Yeah. You know, this schematic -- what was  
4 this from? Our total production life of PAA3 is  
5 anticipated to be over that period of time.

6 Q. So in other words, you're telling me that  
7 14 and 17, well fields 14 and 17, should be depicted  
8 on this graphic that's under Tab D?

9 A. As I had said -- you know, I truly hate to  
10 get into this business of trying to draw our  
11 accounting units into a regulatory context. What I  
12 can say is probably more appropriate, is we just  
13 eliminate any indication of well fields on the mine  
14 plan if that's going to be a source of confusion.  
15 What this graphic is supposed to say is that we plan  
16 to produce PAA3 over that period of time.

17 Q. Okay. And you don't have any plan for  
18 which locations you're going to go in first or second  
19 or third?

20 A. That would be something that would be  
21 dependent on a number of other factors, and it could  
22 be in any sequence that, for example, mineral owners  
23 may choose, or you know, that our engineering staff  
24 may choose. You know, with the production  
25 authorization in hand, we would have the flexibility

1 of developing these well fields as we see fit.

2 Q. And I'm sorry. Mineral owners, you don't  
3 have the right to these, the minerals?

4 A. I didn't say that.

5 Q. I'm sorry. You said mineral owners might  
6 be the --

7 A. What I'm saying is that there's a number of  
8 external circumstances that would lead us to choose  
9 the way that we develop the production area.

10 Q. Okay. And how would mineral owners play  
11 into this? Because I would have thought you had the  
12 mineral rights and could do --

13 A. It may be -- there's multiple land owners,  
14 and it may be -- and I just used it as an example in  
15 the area where we have an agreement to go to one area  
16 first.

17 Q. Well, you don't have those agreements in  
18 place?

19 A. We have no written agreements on what areas  
20 we would go to first in place.

21 Q. But with the mineral owners, you don't have  
22 the agreements to get on to the property --

23 A. There is no mine --

24 THE COURT: Let her finish her question  
25 first.

1 THE WITNESS: Yes.

2 BY MS. ROWLAND:

3 Q. Okay. I'm trying to determine how mineral  
4 owners would play into this. And the reason I'm  
5 asking these questions is I'm trying to determine --  
6 you don't have agreements with the mineral owners to  
7 get on to their property to mine the uranium at this  
8 point?

9 A. I didn't say that, no.

10 Q. Okay. Then what are you saying about the  
11 mineral owners?

12 A. I'm just saying that there are external  
13 circumstances that would dictate what properties we  
14 would produce first.

15 Q. Okay. But it doesn't sound like agreements  
16 with mineral owners would have any part in that. It  
17 would be more your internal decision, correct?

18 A. It would be in everything that would --  
19 everything that would control what properties, what  
20 portion of the ore we would produce first would be an  
21 internal decision.

22 Q. Okay. That -- and that makes sense. And  
23 so you're saying that you really haven't made a  
24 decision which of these well fields you're going to  
25 produce first?

1           A.       I don't have -- I don't have the knowledge  
2 of what that order would be, no.

3           Q.       You don't. Okay. I mean, the company --  
4 you would know if the company had made a decision?

5           A.       Yeah. I don't think a decision has been  
6 made.

7           Q.       Okay. So essentially, at this point, it  
8 could be any of these well fields that you would be  
9 producing from once you get your authorization?

10          A.       That is correct.

11          Q.       Okay. Another question I had from -- can  
12 you hear me okay?

13                   THE REPORTER: Yes.

14          MS. ROWLAND:

15          Q.       Another question I had from that same  
16 exhibit -- actually, I think it's another exhibit. It  
17 would be better -- I have a copy of the permit issued  
18 on the 28th of June 1990. Do you have a copy of  
19 that?

20          A.       I think it could be gotten pretty easily.

21                   THE COURT: Why don't we go off the  
22 record while you look for it.

23                               (Off the record.)

24          BY MS. ROWLAND:

25          Q.       URI Exhibit 4, and let me make sure this is

1 the same thing that you have. It's permit number  
2 URO2827. Do you have that in front of you?

3 A. That's right. January 1990?

4 Q. Yes. Eleventh of -- okay. Could you turn  
5 to Page 11 of that exhibit? Is this the mine -- the  
6 original mine plan for the -- for URI in the  
7 Kingsville Dome area?

8 A. I think this is the mine plan that was  
9 current with this permit.

10 Q. Okay. But this is the original one in the  
11 original permit?

12 A. Well, no, it's not the original permit.  
13 This permit superceded another permit. This was the  
14 mine plan at the time that this permit was issued.

15 Q. Okay. And in force. How long was this  
16 permit in force?

17 A. I think it's in force in perpetuity.

18 Q. So it's the one that's in force now?

19 A. Yes.

20 Q. Oh, okay. As you understand it. It shows  
21 production area 3 on here, and it says area 3 -- do  
22 you see down there in the lower left corner where it  
23 has area and then acreage? And this shows area 3  
24 having, I believe, if I can read this correctly,  
25 150.83 acres? Is that what that says?



1           A.       Right.

2           Q.       Okay. And now, we're talking about 92 now,  
3 right? I'm sorry. 94.

4           A.       Well, production area pattern is 92.

5           Q.       Okay. Okay. So is area 3 actually 150.83  
6 acres or is it 92 acres?

7           A.       You're comparing apples and oranges because  
8 what this is is this is the mine plan that was based  
9 on the information that we had available to us in  
10 1989. Since then, the company has performed extensive  
11 exploration work in the areas. As a result, we have  
12 reformulated our plan, and that has been resubmitted  
13 as part of the application of PAA3, which has a  
14 revised mine plan and shows, quite frankly, the ore in  
15 a different location because that's where it fell as  
16 compared to where we estimated it was in this early  
17 draft -- in this early plan where we didn't have as  
18 much geological information available to us.

19          Q.       Okay. Let me make sure. This is the --  
20 this is the permit that's still in force. And what  
21 you're trying to do with your application that -- what  
22 you changed is change the -- the configuration of 3  
23 based on the new information; is that correct?

24          A.       Yes. It's the updated mine plan.

25          Q.       Okay. But that's not in effect yet.

1 That's what we're looking at today.

2 A. That's what this hearing is about.

3 Q. That's right. Okay. And so when you were  
4 doing 9 and 10, you were actually using this mine plan  
5 when you were -- in '96 and '98 -- to '96 to '98 that  
6 we discussed a little earlier, you did mine field 9  
7 and 10 in production area 3?

8 A. In production area 3 -- I think this is  
9 related to a question I've been asked earlier --  
10 production area 3 has never ever changed its  
11 boundaries. The production area 3 application that we  
12 filed in 1997 is the identical configuration of the  
13 production area 3 that is in the application that's  
14 being reviewed in the hearing today.

15 Q. Okay. So there's a production area that --  
16 production area authorization that you're talking  
17 about that was authorized in '97 that shows something  
18 different than the mine plan, this mine plan?

19 A. Yes. The mapped size of the mine plan --  
20 the mapped configuration of the mine plan in '97 is  
21 essentially the same as it is in the mine plan that  
22 we're dealing with today.

23 Q. Okay. In the application that we're  
24 dealing with today?

25 A. Yes, ma'am.

1 Q. Okay. I think I have about one more  
2 question. And can I ask you a question? I know that  
3 Mr. Hill doesn't like this, but the permit that we  
4 were just looking at, when you talk about base permit,  
5 is that the permit you're talking about?

6 A. I've always considered it an area permit,  
7 and that goes back to my understanding of the rules  
8 that were drafted back in the late '90 -- or late '70s  
9 where we referred to an applicant for a Class III  
10 activity may operate under an area permit rather than  
11 an individual permit.

12 Q. And that's fine. But you've mentioned base  
13 permit several times in your testimony, and I'm not  
14 trying to say that you actually think of this as a  
15 base permit and not an area permit. And I'm not  
16 trying to -- I just wanted -- want to make sure when  
17 I'm looking at the record and you have testified about  
18 base permit, that you're really talking about the area  
19 permit.

20 A. There is only one permit. It's this  
21 permit, and it's our area permit.

22 Q. Okay. If you mistakenly say base permit,  
23 you mean area permit, right?

24 A. Yes.

25 Q. Okay. When you're mining, is the water

1     that you're mining, is that from the Goliad? Is that  
2     in the Goliad formation?

3           A.     Yes, ma'am.

4           Q.     Okay. Does that water travel into the  
5     shale of -- I'm a little confused. Is the shale an  
6     aquitard above the Goliad?

7           A.     Yes. You think of it -- think of it as the  
8     same stuff they make flowerpots out of.

9           Q.     Okay. And so will it absorb some of the  
10    water then?

11          A.     For all practical purposes, it's an  
12    aquitard, and it retard -- by that, if you go to any  
13    dictionary of geologic terms, you'll see that an  
14    aquitard is not defined as impermeable, but it's  
15    defined as substantially retard the flow of water into  
16    solutions.

17          Q.     Okay. So over time, the water, if under  
18    enough pressure, could go through the aquitard, but  
19    it's...

20          A.     Over the time frame that we're operating --

21          Q.     Uh-hum.

22          A.     -- the answer is no.

23          Q.     Okay. But there's enough of it that  
24    travels that you can monitor the shale for what's in  
25    the Goliad; is that correct?

1           A.       You really can't monitor the shale if  
2   you're thinking of monitor wells because it's so  
3   impermeable that a well with a screen placed in the  
4   shale would not yield water. That's why we must go to  
5   the sand that overlies it.

6           Q.       Okay. And I have one last question.  
7                    The RO process, that's only used during  
8   restoration; is that correct?

9           A.       No, I won't say that.

10          Q.       Okay.

11          A.       Because there are some applications where  
12   we need and use cleaned water during the production  
13   process as well, but it is primarily used during the  
14   restoration process.

15          Q.       Okay. But let me just ask this question:  
16   You extract water during the production process, take  
17   the uranium out of it and put it on the rosin and then  
18   reinject that same water?

19          A.       Yes, ma'am.

20          Q.       Okay. And that would not -- that water  
21   would be put back in just as it was when you -- after  
22   you took the uranium out?

23          A.       Yes.

24                   MS. ROWLAND: Okay. I pass the  
25   witness. That's all my questions. Thank you.

1 THE COURT: I have no clarifying  
2 questions. Mr. Hill.

3 REDIRECT-EXAMINATION

4 BY MR. HILL:

5 Q. Do you recall being asked by Mr. Valdivia a  
6 question having to do with whether a not if a monitor  
7 well were located closer to the one or more wells it  
8 was monitoring, would an excursion from that well  
9 arrive more quickly, the excurted fluids from that  
10 well, arrive more quickly at the monitor well than  
11 were the monitor well farther from the mining well,  
12 you recall?

13 A. I do.

14 Q. First of all, is the detection -- is the  
15 first detection of a potential for excursion, or the  
16 first alert, the arrival of the fluid front or the  
17 arrival of a pressure front?

18 A. I've testified to this matter before, and  
19 I'll repeat it. The pressure front arrives far before  
20 the fluid front in terms of detection.

21 Q. For the purposes of determining when and  
22 how the company shall respond to first notice of a  
23 potential excursion, does the difference in time that  
24 it would take excurted fluids to reach a monitor well  
25 near or farther matter?

1           A.       What matters is when you don't have  
2       excursions.

3           Q.       I understand. I'm indulging Mr. Valdivia's  
4       assumption that there might be one and we're inquiring  
5       to know how the company's response might be affected  
6       by the location of the monitor wells closer rather  
7       than farther from the wells which were being  
8       monitored.

9           A.       I guess I can't see a practical reason why  
10      it matters. Certainly, the monitor well is within the  
11      production area, it's within the area that is  
12      permitted, it's within the area that's exempted, it's  
13      within the area that we're authorized to conduct  
14      mining activity. So I can't see where it would  
15      matter.

16          Q.       You mentioned the area exempted. What do  
17      you mean by that?

18          A.       Well, as part of the 1989 proceeding, both  
19      at the state and federal level, this area was reviewed  
20      for criteria as a mineralized zone that would qualify  
21      for an exemption under the federal program. And as a  
22      result of days of testimony and discussion and hearing  
23      and decision, the Commission, and then subsequently  
24      the EPA, issued an aquifer exception which allowed the  
25      type of activity that we are permitted under the area

1 permit, and with this production area is a subset to  
2 be allowed to happen.

3 Because in order to qualify for in situ  
4 mining in a potential underground source of drinking  
5 water, the federal requirement is the aquifer must be  
6 exempted according to the provisions that are in the  
7 Code of Federal Regulations.

8 Q. Is it your understanding that the necessary  
9 exception was issued prior to URI's commencement of  
10 operations?

11 A. The exception was issued, and I believe I  
12 have incorporated that in my prefiled testimony.

13 Q. Is the -- is a monitor's -- or a permitted  
14 monitor's latitude to revise and update his mine plan  
15 of any importance to a miner who holds a permit to  
16 conduct ISL mining?

17 A. It's absolutely necessary to be able to  
18 update the mine plan as new information is brought to  
19 light.

20 Q. Can you indicate some of the kinds of  
21 considerations that would -- that would move or give a  
22 miner an incentive to update his mine plan?

23 A. Well, there are -- there are market  
24 considerations and there are physical considerations.  
25 With regard to the market, and especially in the



1 uranium business where we've been subjected to a  
2 artificially-induced market that we couldn't have  
3 possibly have planned for, and that is the liquidation  
4 of government inventories as a result of the collapse  
5 of the Soviet Union, the uranium prices have  
6 fluctuated widely. We can't possibly produce and  
7 conduct economic operations if the sales price of our  
8 material is under water.

9 Q. Excuse me. What do you mean by "under  
10 water"?

11 A. Is not economic. And as a result,  
12 operations must be placed on standby. It's unforeseen  
13 at the time that the mine plan was drafted and it  
14 changes. It results in a change of the mine plan that  
15 down the road would require adjustment as a result of  
16 the realities of the market that we've encountered.

17 Q. Are you referring to adjustments in whether  
18 or not URI mines?

19 A. Yes. Now, physical constraints. And we've  
20 had that type of changes in this project as well. As  
21 initially when land is acquired for mining, geologists  
22 are able to do reconnaissance level work where they  
23 estimate uranium ore will be in place. As time goes  
24 on, additional delineation is conducted. With that  
25 delineation, new information is available.

1           We learn on a more refined level where the  
2 uranium ore is, what the pounds of reserves are in the  
3 ground. It may be an area that initially we thought  
4 had a year's worth of production, for example, that  
5 was projected with a very small amount of data, and a  
6 company took a risk leasing land where we had a small  
7 amount of data and we permitted that data, and  
8 subsequent drilling would show that either because of  
9 market conditions or because of physical layout in the  
10 ground, that there was a change.

11           There was a change in the configuration  
12 that would result in the change of the configuration  
13 of the well fields. It may be that there was ore in  
14 the ground that at a market price of \$30 a pound was  
15 an extremely viable resource. But at a market price  
16 of \$15 a pound, the company would choose to bypass.

17           Well, there's no way that that can be  
18 determined ahead of the game. We'd have to learn that  
19 information with drilling, and we'd have to learn from  
20 that with what the market gave us, and subsequently  
21 have to adjust our mine plan as a result of that.  
22 It's -- we're in the resource business, but it's a lot  
23 with any type of business that have to adjust their  
24 business plan to respond to the market.

25           MR. HILL: Pass the witness.

## RECROSS-EXAMINATION

BY MR. VALDIVIA:

Q. You answered in questions -- well, I'll direct your attention to the area permit, to your -- the map that Ms. Rowland questioned you about. And she asked you if area 3 showed an acreage of 150 acres -- 150.83 acres. Do you recall that?

A. Let me turn to it if I could.

Q. Are you there?

A. I'm there.

Q. Okay. On that -- on that figure it says area 3 has an acreage of 150.83 acres; is that right?

A. That is correct.

Q. And that's correct?

A. That's what it says on this map. It says 150.83 acres.

Q. Now, at Tab 1 of the PAA application, the map, look behind Tab 1. Looks -- are you there? It looks like this?

A. Yes.

Q. It says, "mine area". Could you tell me how much acreage it says to the mine area?

A. It says 393 -- 373 acres.

Q. Okay. That's a mine area for PAA3?

1 A. Yes.

2 Q. Roughly twice what is identified in the  
3 previous figure that you testified about? More than  
4 twice; is that right?

5 A. Yes.

6 MR. VALDIVIA: I pass the witness.

7 MR. REDMOND: I pass the witness.

8 MS. ROWLAND: I just have one question.

9 RECROSS-EXAMINATION

10 BY MS. ROWLAND:

11 Q. Mr. Pelizza, one of the -- you told  
12 Mr. Hill in response to a question that a lot of your  
13 changes in production area were dependent on what you  
14 found out as you were mining, and you know, how it  
15 progressed; is that not correct?

16 A. There are physical -- you know, there's  
17 certain physical aspects of ore that, yes, as you do  
18 additional exploration drilling, you learn more and  
19 that causes you to change your mine plan.

20 Q. Okay. And is it more likely that you would  
21 identify -- identify the subsurface or the way the ore  
22 laid out closer to where you're already mining than  
23 farther away from where you're mining?

24 A. Let me try to answer your question.

25 Q. If it's not clear, would you like for me to

1     rephrase it?

2           A.     Well, I'd be glad to give you an answer and  
3     you can tell me if it's wrong because it's important  
4     to understand the sequence of our development.

5                     In production area 3, for example, we  
6     have X amount of exploration wells, and we'll have a  
7     geologist to -- who can talk about the actual detailed  
8     exploration as this hearing goes on and the amount of  
9     holes that are there.

10          Q.     But would it be better to ask him the  
11     question?    Would --

12          A.     Well, maybe the best things don't always  
13     get answers twice, then you can...

14          Q.     Okay.   And I can choose the answer that I'd  
15     like.

16          A.     You should get the same answer.   But --

17          Q.     If they're not the same.

18          A.     But as time goes on, and as the production  
19     area's developed, additional delineation holes are  
20     drilled.   And as additional delineation holes are  
21     drilled, more and more information is learned about  
22     the geometry of the ore, and that will result in  
23     changes of the dimensions of individual well fields  
24     within a production area because we're forced by  
25     mother nature to put our well fields only around the

1 economic ore. And the only way we can find that  
2 information out is through detailed delineation and  
3 learning through drilling.

4 Q. Okay. So you'll drill --

5 A. And that's the geologist's job.

6 Q. And I think the question I'm trying to get  
7 to is: You're drilling in an area that you're  
8 producing, and so you're delineating areas where  
9 uranium is -- your areas where uranium is, and so the  
10 closer you are to where your delineation is, the  
11 better you're able to produce what may be in that  
12 area; is that correct?

13 A. Yes. We will concentrate our drilling in  
14 areas where the production is most immediate.

15 Q. Okay. Okay. And then proceed out from  
16 there, so to speak?

17 A. And simultaneously, there will be more  
18 regional exploration at wider spacing beginning the  
19 earlier stages of definition farther away from  
20 production. It's much like the oil business in terms  
21 of your more detailed drilling is in the field, yet  
22 there are different category of geologists that will  
23 be out doing more regional work for the oil company's  
24 work years ahead.

25 Q. So if we look at J-5 again, and there's two

1 areas of well fields with an area where there are no  
2 well fields in between, you've determined that the  
3 uranium ore runs along where the well fields run it  
4 from this exploration that you've done?

5 A. At this point, we believe there are two  
6 predominant middle fairways through that -- if that's  
7 what you meant by J-5 on that map. It would not  
8 surprise me through our detailed delineation to see a  
9 meandering where they encroach upon each other to some  
10 extent or possibly even touch.

11 MS. ROWLAND: Okay. I just wanted to  
12 sort of figure out in what -- how you would decide  
13 what direction to go in. Okay. Thank you very much.

14 THE COURT: Redirect based on cross  
15 or...

16 MR. HILL: I'm trying to figure out  
17 what the cross...

18 REDIRECT-EXAMINATION

19 BY MR. HILL

20 Q. Mr. Valdivia asked you to compare a stated  
21 size for PA -- for production area or proposed  
22 production area 3 on one source, which -- on which you  
23 indicated the size of the area of the surface  
24 extraction of production area was 373 acres. Do you  
25 recall that?

1 A. Uh-hum. Yes

2 Q. What is the document in which -- or with  
3 which that area was indicated? Was it --

4 A. This is our -- the 373-acre area is within  
5 our application for production area 3, which is the  
6 subject of this proceeding.

7 Q. The 373 acres is behind Tab 1. Now, the  
8 earlier -- earlier, you had identified a figure  
9 showing a production area 3, 150.83 acres. What is  
10 the document that which -- or with which that was  
11 associated?

12 A. This is our area permit mine plan. It's  
13 the old outdated mine plan based on old information.  
14 And I would add that the production area 3 as shown on  
15 that mine plan is a different parcel of property than  
16 the production area 3 that we're dealing with today.

17 Q. My question was simpler. I just want to  
18 know what document with which that was connected.  
19 What was it?

20 A. It's the URO28 -- it's -- it --

21 Q. Is it current 28 --

22 A. It's a current attachment or Exhibit 4, I  
23 believe.

24 Q. Well, let me be clear. Is it the  
25 current --



1           A.       Area permit.

2                   MR. HILL:   Thank you.   Pass the  
3   witness.

4                   THE COURT:   Mr. Valdivia.

5                               RE CROSS-EXAMINATION

6   BY MR. VALDIVIA:

7           Q.       Okay.   You just testified the current area  
8   permit as Exhibit 4, URI Exhibit 4 --

9           A.       And I may be wrong.

10          Q.       Excuse me?

11          A.       It's the area permit.

12          Q.       I think that's what I called it.   And Page  
13   11 is that map I had you referred to earlier; is that  
14   correct?

15          A.       That is correct.

16          Q.       And you just testified that the area 3 on  
17   Page 11, 150.83 acres, that's a different area than  
18   the PAA3 that we're talking about at this hearing; is  
19   that right?

20          A.       That is correct.

21          Q.       Is the area that we call PAA3, and which is  
22   the subject of this hearing, is that delineated on  
23   this map on Page 11?

24          A.       No.   It's delineated on the revised mine  
25   plan in the PAA application.

1 Q. Is the area that we call PAA3, does that  
2 land surface -- does that correspond with any of the  
3 land surface you've mapped out here on Page 11?

4 A. The PAA application is -- yes. If you look  
5 at the amended permit area boundary in this permit,  
6 and you look at the permit boundary in figure 10 of  
7 the production area authorization application, they're  
8 one in the same.

9 Q. Well, I'm trying to figure out, figure to  
10 Page 11, I see a little area here that's got a number  
11 3, Roman numeral III. Do you see that?

12 A. Yes.

13 Q. And I think up to this point, we've been  
14 confused, and we've been equating that with PAA3. And  
15 your testimony is they're not -- they're not the same  
16 thing; is that right?

17 A. What I said is no.

18 Q. Is that correct?

19 A. What that is is delineated 3 on this  
20 outdated map. The updated map that we revised mine  
21 plan shows that as...

22 Q. All right. Are you going to PAA  
23 application? Is that a yes?

24 A. The revised area map with an updated  
25 information shows that area that's indicated as a 3 on

1 the mine plan as future PAA5.

2 Q. Okay. Could you tell me where you are in  
3 the...

4 A. I'm in Tab 10.

5 Q. Tab 10.

6 MR. HILL: Excuse me. Can you indicate  
7 the document?

8 A. Tab 10 of the application that is the  
9 subject of this permit. The production area  
10 authorization application, June 25th, 1997, updated  
11 2003.

12 BY MR. VALDIVIA:

13 Q. Okay. So -- all right. I see an area here  
14 you call PAA3. If I were to take that outline and try  
15 to draw it on Page 11 of the outdated mine plan, what  
16 areas would that outline encompass?

17 A. It appears that it encompassed  
18 predominantly -- my xerox has been through few too  
19 many cycles here, but it appears that six and seven  
20 and a portion of five, and possibly a little bit of  
21 three.

22 Q. Okay. So the new PAA3, the updated plan,  
23 actually incorporates almost no part of the old area  
24 3. If it does, it's just a little bit. Is that your  
25 testimony? I believe it is.

1 A. Yes, that's my testimony.

2 Q. And the rest of PAA3, which is the subject  
3 of this hearing, correspondence to areas Roman numeral  
4 VI, VII and V?

5 A. Yes.

6 MR. VALDIVIA: Okay. I pass the  
7 witness.

8 RECROSS-EXAMINATION

9 BY MR. REDMOND:

10 Q. Mr. Pelizza, subsequent to the issuance of  
11 the area permit, was URI issued a production area  
12 authorization that included an updated mine plan?

13 A. We were issued a updated production area  
14 authorization. I don't know of the mine plan.

15 Q. Did it include a mine plan?

16 A. I'm sure -- I'm certain it did, yes.  
17 There's always an updated plan in every production  
18 area authorization.

19 Q. Was that production area authorization  
20 number 2?

21 A. Yes.

22 MR. REDMOND: I have no more questions.  
23 Pass the witness.

24 THE COURT: Ms. Rowland.

25 MS. ROWLAND: Can you give us just a

1 second, Your Honor?

2 THE COURT: Yes.

3 (Off the record.)

4 THE COURT: Ms. Rowland has announced  
5 that she has no more questions on recross, and so the  
6 focus then shifts to Mr. Hill about redirect.

7 MR. HILL: I have no further questions,  
8 Your Honor.

9 THE COURT: All right. And so with no  
10 further redirect, then there is no further recross.

11 MR. HILL: There was -- there is a  
12 question among the table. I had thought that the  
13 Exhibit 41, which is Mr. Pelizza's prefile, had been  
14 offered and admitted. And if there's any question on  
15 that, we should address it now before I release him.

16 THE COURT: What's the understanding of  
17 opposing counsel?

18 MR. VALDIVIA: I thought -- I thought  
19 we took this up at the beginning before Mr. Pelizza's  
20 cross, and my recollection is, yes, Exhibit 41 was  
21 admitted.

22 MS. OBERLIN: The prefiled direct  
23 testimony, yes.

24 MR. HILL: Okay. Well, I had noted  
25 that, but I thought I heard conversation indicated

1     there was a question, and if so, I wanted to dispose  
2     of it now rather than later.

3                   THE COURT:   And my notes reflect that  
4     Exhibit -- URI Exhibit 41 was identified and offered  
5     and admitted.

6                   MS. OBERLIN:   Well, Mr. Hill, the  
7     question I had during testimony was that the  
8     correction that just behind Tab D to his prefile when  
9     there was the copy error --

10                  MR. HILL:   Yes.

11                  MS. OBERLIN:   -- I don't believe that  
12     has been admitted into evidence.

13                  MR. HILL:   All right.

14                  THE COURT:   That's correct.

15                  MS. OBERLIN:   It might be helpful to  
16     have it.

17                  MR. HILL:   Yes.   I definitely want  
18     that.   I -- my notes were otherwise.   And so at this  
19     time, I'll ask Mr. Pelizza.

20                                 REDIRECT-EXAMINATION

21     BY MR. HILL:

22                 Q.     Is this the landscape printed version of  
23     what was truncated as a portrait version in your -- as  
24     a attachment to -- or an exhibit with your prefiled  
25     testimony?

1           A.       Yes.

2           Q.       All right. Do you wish to adopt that, too,  
3 as a portion of your testimony in these proceedings?

4           A.       Yes.

5           Q.       And in case there'd be any remaining  
6 question, does that complete -- with that, have you  
7 now adopted as a portion of your testimony in this  
8 proceeding all of your prefiled testimony and all of  
9 your attachments to your prefiled testimony?

10          A.       Yes.

11                   MR. HILL: All right.

12                   THE COURT: Any objections to the  
13 landscape version?

14                   MR. REDMOND: I'd like a copy of it.

15                   MS. ROWLAND: Yes. Your Honor, that  
16 was my only...

17                   MS. OBERLIN: And I'd like to have an  
18 exhibit number.

19                   MR. HILL: Would you like a separate  
20 exhibit number for it? Otherwise, it will be a piece  
21 of Exhibit 41.

22                   THE COURT: Yes. I would like it as a  
23 separate exhibit number.

24                   MR. HILL: Then we'll tag it  
25 separately.

1 THE COURT: And it may be Exhibit  
2 Number 41A if you wish. Why don't we go off the  
3 record.

4 (Off the record.)

5 THE COURT: Mr. Hill, you're marking  
6 the landscape version of this document as URI 41A?

7 MR. HILL: Yes.

8 THE COURT: And has everyone had an  
9 opportunity to at least see this document? Yes. And  
10 Mr. Hill and counsel have agreed that he will make  
11 copies of this document and distribute them to all  
12 present tomorrow morning, and that's agreeable to  
13 everyone present. And so we will now go off the  
14 record, yet, again.

15 (Off the record.)

16 THE COURT: Mr. Pelizza, thank you very  
17 much for your testimony. You are excused.

18 THE WITNESS: Thank you.

19 THE COURT: You're welcome to stay and  
20 listen to the rest of the program or you may leave.

21 All right. We will now go off the record  
22 again while the documents are assembled for the next  
23 witness.

24 (Off the record.)



1 RONALD E. GRANT

2 having first been duly sworn, testified as follows:

3 THE COURT: Mr. Hill, please, proceed.

4 MR. HILL: The Applicant calls Ronald  
5 E. Grant.

6 DIRECT EXAMINATION

7 BY MR. HILL:

8 Q. Mr. Grant, would you state your name,  
9 please, for the record?

10 A. My name is Ronald Edward Grant.

11 Q. And I show you now a stack of papers marked  
12 as Exhibit Number 42, and ask you to leaf through it  
13 and tell me whether it contains an Attachment A. And  
14 leaf through both packages, the exhibit, including its  
15 Attachment A, and if you can tell me what -- identify  
16 those documents for me.

17 A. The document is the prefiled direct  
18 testimony of Ronald Grant, Ronald E. Grant, August  
19 2005, with Attachment A, a statement of  
20 qualifications.

21 Q. Did you -- did you prepare or cause these  
22 documents to be prepared?

23 A. Yes, I did.

24 Q. Have you reviewed these documents to  
25 satisfy yourself as to their contents?

1           A.       Yes. I looked through them, and it looks  
2 like the one I prepared.

3                   THE COURT: I'm sorry. Mr. Grant,  
4 you're going to need to speak loudly so that everybody  
5 in the room can hear you.

6           A.       Yes. I did review them and briefly here,  
7 and it looks like the ones I prepared, yes.

8                   THE COURT: Thank you.

9 BY MR. HILL:

10           Q.       Let me ask you if at this point you wish to  
11 adopt the statements made -- the answers made to the  
12 questions asked in these documents, and the Attachment  
13 A attached hereto, as a portion of your testimony in  
14 this proceeding?

15           A.       Yes, I do.

16                   MR. HILL: With that, we will tender  
17 the witness for cross-examination.

18                   THE COURT: Very good.

19                   MR. VALDIVIA: Ms. Oberlin will do  
20 cross.

21                   THE COURT: Ms. Oberlin.

22                               CROSS-EXAMINATION

23 BY MS. OBERLIN:

24           Q.       Good afternoon, Mr. Grant. Do you have a  
25 copy of your prefiled direct testimony there on the

1 stand?

2 A. Yes, I do.

3 Q. Okay. I'll be referring to that. You're  
4 currently employed by URI?

5 A. That's correct.

6 Q. Here at the Kingsville location?

7 A. Yes.

8 Q. And how long have you been employed with  
9 URI at the present time?

10 A. I started again with URI, after having  
11 worked in Australia for a few years, in -- on February  
12 28th, 2004.

13 Q. Okay. And turning to Attachment A, your  
14 statement of qualifications, you received a bachelor's  
15 degree in chemical engineering from the University of  
16 Texas?

17 A. That's correct.

18 Q. And in 1976?

19 A. Yes, in January '76.

20 Q. And you're currently an engineer in the  
21 state of Texas?

22 A. Yes, I am.

23 Q. You're licensed by the State?

24 A. Yes.

25 Q. Are you a licensed geoscientist?

1           A.       No.

2           Q.       Do you hold yourself out as a  
3 geoscientist?

4           A.       Do I hold my what?

5           Q.       Do you hold yourself out as a geoscientist?

6           A.       No.

7           Q.       You began your career working with Exxon?

8           A.       Yes, I did.

9           Q.       And what positions did you hold with  
10 Exxon?

11          A.       I was a reservoir engineer for the first  
12 two and a half years, and then -- well, no. Two and a  
13 half years as a reservoir engineer in the district  
14 office at Kingsville, Texas. I transferred to Corpus  
15 Christi as a division reservoir engineer for about  
16 eight months, and then worked at subsurface  
17 engineering with them for another year or so.

18          Q.       And what does it mean to be a reservoir  
19 engineer?

20          A.       In the Kingsville district office, I had  
21 areas where I was the engineer for deciding what to do  
22 with the reserves that they had there, and how to  
23 produce them, how to recomplete the wells, where to  
24 drill new wells and things like that.

25          Q.       And your title at URI now is also reservoir

1 engineer?

2 A. That's correct.

3 Q. And if so, in your industry, is there a  
4 general understanding of what types of work a  
5 reservoir engineer does as opposed to other types of  
6 engineers?

7 A. It's somewhat vague, but a reservoir  
8 engineer would be concerned with matters having to do  
9 with production simulation of what's happening in the  
10 production area; whereas the portion of the time I  
11 worked at Exxon as a subsurface engineer, I was more  
12 concerned at that point with -- with the procedures  
13 and the mechanical procedures of reworking wells and  
14 recompleting wells.

15 And when I worked as a reservoir  
16 engineer in the division, I was working on projects  
17 for stimulation of reservoirs, handling technical  
18 problems with -- that came up on a contract basis for  
19 reservoirs, handling the problems that the district  
20 didn't have.

21 Q. And when use the term "reservoir", are you  
22 just referring to any collection of minerals or  
23 resources under the earth's surface?

24 A. When I worked with Exxon, it was just for  
25 petroleum.

1 Q. Just for petroleum. Okay. Was that also  
2 true at Fina Oil and Chemical Corporation where you  
3 worked?

4 A. It was just for petroleum then as well.

5 Q. And when you refer, then, to yourself as  
6 being a reservoir engineer at URI, you're talking here  
7 about uranium resources in reservoirs under the  
8 surface of the earth?

9 A. That's correct.

10 Q. Any other resources or minerals you're  
11 concerned with as a reservoir engineer at URI?

12 A. No.

13 Q. Okay. At any of the other -- well, I guess  
14 there was just one other. At Heathgate Resources,  
15 what type of minerals and resources did you work with  
16 there?

17 A. It was uranium there as well.

18 Q. And was that here in the United States or  
19 in Australia?

20 A. It was in Australia.

21 Q. Okay. And what was the reason for your  
22 moving or leaving URI in the year 2000?

23 A. The opportunity at Heathgate was very  
24 alluring financially, and romantically as well, to go  
25 to Australia and work. There were -- at that time,

1 everyone knows that URI was on shaky ground. At that  
2 point -- I don't know if that's a good word to be  
3 using up here, but sorry about that -- but there were  
4 rumors flying everywhere, and I just felt like it was  
5 an opportunity that it would be difficult to pass up,  
6 so I took it.

7 Q. When you parted with URI in the year 2000,  
8 would you call that on amicable terms with your  
9 company?

10 A. Yes, very amicable. There was -- there was  
11 some talking trying to keep me to stay, and I  
12 appreciated that. And I -- it was put on hold for  
13 awhile while I thought about it some more. And  
14 finally after about a couple of weeks, I went ahead  
15 and decided to go.

16 Q. Okay. So then you lived and worked in  
17 Australia for a couple of years at Heathgate?

18 A. Yes.

19 Q. And then you took a small break and  
20 returned to URI?

21 A. That's right.

22 Q. And when did you return to URI?

23 A. On February 28th of 2004.

24 Q. Were you working in your profession from  
25 2002 to 2004?

1           A.       No.   From June -- in June of 2002, I had a  
2   -- when I knew that my date was coming up and I would  
3   be leaving Heathgate, I had interviewed with Southern  
4   Cross Resources in Australia and lined up a position  
5   with them, similar -- they were starting up a plant  
6   just like Heathgate had, and it was to start in  
7   August.

8                   The -- when August came by, the price  
9   was falling still and not rising, and they delayed it  
10  a month to September, and then to October, and then to  
11  November. And at that point, I realized that --  
12  that -- I realized then that in December, they don't  
13  do -- ever do anything in Australia. It's a hot month  
14  there then, and they shut everything down. It's hard  
15  to get supplies. They all take vacation.

16                  So I decided to visit my brother in  
17  Houston for a month or so. In fact, when we first  
18  talked, it was just going to be two weeks. When I got  
19  there -- and he works for the -- in the oil industry  
20  in Houston. And his wife had cancer, and she -- he  
21  was spending two, sometimes three days a week with his  
22  wife at the hospital, and I took over that. And one  
23  day became another, one week another, and ended up  
24  staying there from December through the next year  
25  until I began working for URI. She passed away in



1 September of that year.

2 Q. And prior to returning to URI in February  
3 of 2004, were you working at all with URI in a  
4 contract basis or any other nature from 2002?

5 A. No, I was not.

6 Q. And when you were working at Heathgate,  
7 that was on a limited contract basis, not indefinite  
8 employment?

9 A. It was probably longer than they expected  
10 it to last, and shorter than I had wanted it to. I  
11 would have liked to have stayed four years, and I  
12 could have stayed as long as five years, and it ended  
13 up just being two and a half years.

14 Q. Did you -- were you asked to leave there  
15 for any reason of lack of performance in your job?

16 A. No. I was, actually, scheduled for going  
17 on as a consultant with them and leaving them as a --  
18 leaving them as a full-time employee, and going on and  
19 working on a day-to-day basis as a consultant making  
20 interestingly enough as much in two weeks as I would  
21 have in the entire month before. So I was happy about  
22 that.

23 But I fell down the stairs and severely  
24 hurt myself and was laid up for about six weeks. And  
25 in that time, the company got along just fine without

1 me. Terrible. But -- so I was not held on as a  
2 contract employee.

3 Q. Okay. So your position wasn't needed, they  
4 realized, once you had been out?

5 A. Yes.

6 Q. And did the work you did at Heathgate, did  
7 that resemble or was it similar to the work you did  
8 for URI in the years 1987 to 2000?

9 A. It -- it was almost the same job. It --  
10 but they were just starting up a plant, so there  
11 was -- at the beginning, there was more working with  
12 contractors, making sure designs were correct. In  
13 Australia, the -- being 500 kilometers as we were from  
14 civilization, really, lots of planning was required.

15 You could not call up and get something  
16 two or three days later, it had to be planned weeks in  
17 advance. And so getting in the plant, and the well  
18 field took a lot of work, and that took up all my time  
19 at the beginning. After that was going and I got  
20 other people working in line taking care of the  
21 smaller work of adding new well fields, my attention  
22 turned almost completely to reservoir simulation and  
23 seeing where the fluids were going and graphing and  
24 plotting and seeing what the production was doing so  
25 we could make sure we were as efficient as we could

1 be.

2 Q. And when you were at URI from 1987 to 2000,  
3 I noticed you mentioned that you were the on-site  
4 engineer for permitting and drilling Class I  
5 nonhazardous disposal well at Rosita project, and you  
6 don't make a mention here of WDW-248. Is WDW-248 at  
7 the Kingsville Dome site?

8 A. 248 is the Kingsville Dome site. When I  
9 came to work for URI, they were within, I think, 10  
10 days of drilling 248. And so I was fortunate enough  
11 to watch the process that Steve Reed & Associates, who  
12 were the contractors, do -- to put that well in, watch  
13 what they did and observe how the well was put in,  
14 what problems they had with the State or how they  
15 handled the affairs with the State, and just gained  
16 experience during that time.

17 Q. Do you know what the number of the Class I  
18 well at Rosita project is?

19 A. It's 250, 250.

20 Q. I also noticed in your most recent  
21 description of your work at URI, you mentioned that  
22 you do some computer simulation for disposal well  
23 WDW-185. Where is that well located?

24 A. That's the well for the Vasquez project  
25 that we had.

1 Q. And that's at the Vasquez site?

2 A. It's -- it is unlike our other disposal  
3 wells that are right in the middle of the site. It  
4 was a well drilled and used as a disposal well by  
5 Caithness in 1986, I believe, is when it was put in.

6 Q. Is that -- I'm sorry. The word  
7 "Caithness", is that a company name?

8 A. Yes. It's -- yes.

9 Q. So someone who owned the site before URI  
10 drilled well WDW-185?

11 A. We didn't drill it, they did. And they  
12 used it as a Class I disposal well for the time until  
13 they not knowing if there was any other part of this  
14 history, but it was turned over to, oh, I don't recall  
15 the company's name, but we purchased it from them  
16 and -- and -- and use the disposal well ourselves.

17 Q. Is Caithness also a uranium mining  
18 outfit?

19 A. Yes, it was.

20 Q. And they were using WDW-185 for uranium  
21 mining wastes?

22 A. It was the same use as what we had.

23 Q. Is WDW-185 still in operation at Vasquez?

24 A. It is. Our first injection in that well, I  
25 believe, was -- well, it was early this year when we

1 finally -- when we started injecting into the well.

2 Q. And so Vasquez wastes are handled at  
3 Vasquez WDW-185 well?

4 A. That's correct.

5 Q. Okay, and Rosita mine wastes are handled at  
6 WDW-250?

7 A. That's correct.

8 Q. Are wastes from Rosita or Vasquez brought  
9 to Kingsville Dome for injection?

10 A. No, they're not.

11 Q. Are Kingsville Dome wastes taken to either  
12 of the other two sites for injection?

13 A. No.

14 Q. Do you work at any other projects owned or  
15 operated by URI?

16 A. No.

17 Q. Do you work on any other projects owned or  
18 operated by other uranium mining companies?

19 A. No, I do not.

20 Q. Okay. Do you work at URI with Class I  
21 wells only?

22 A. Well, you're talking about this disposal  
23 well -- or I work with all the wells that URI has.

24 Q. Including Class III wells?

25 A. Yes. Class III wells, Class I disposal and

1 and any water wells that we might drill.

2 Q. Okay. In your statement of qualifications,  
3 you say that you use computer to simulate underground  
4 fluid flow from mining operations. Does that include  
5 all operations at the Kingsville Dome site? Is it  
6 limited to just the injection well? Is it limited to  
7 just Class III wells or is it everything at the  
8 site?

9 A. No, it would be everything. At one time or  
10 other, I've simulated pressure effects in the disposal  
11 wells as well as the -- the wells in the field which  
12 happens continually on those wells.

13 Q. So when you say "in the field", you mean  
14 Class III wells?

15 A. Class III wells, excuse me.

16 Q. And then the disposal well you were talking  
17 about, the Class I well?

18 A. Uh-hum.

19 Q. Okay. How many engineers are currently  
20 employed by URI at the Kingsville Dome site?

21 A. Okay. Let me count them. Oh, at  
22 Kingsville Dome?

23 Q. Or who work at Kingsville Dome?

24 A. I think that it would just be Richard --  
25 Rick Vanhorn, the vice-president and myself, and Dane

1 McCoy who's the plant superintendent.

2 Q. Okay. Do you have a direct supervisor?

3 A. It would be Rick Vanhorn the  
4 vice-president.

5 Q. Does he have a supervisor?

6 A. The president of the company.

7 Q. And that is?

8 A. Paul Wilmont.

9 Q. And where does Mr. Mark Pelizza fall into  
10 your hierarchy of employment?

11 A. He's the vice-president -- I don't know the  
12 exact title that Mark has right now.

13 Q. Do you report to him?

14 A. No.

15 Q. Does Mr. Vanhorn report to him?

16 A. I don't think so.

17 Q. Do you work with Mr. Pelizza on a  
18 day-to-day basis?

19 A. Not day-to-day. He works in the Dallas  
20 office, but whenever he needs something or we need to  
21 communicate, we can communicate. It's been often  
22 lately.

23 Q. Okay.

24 A. Whenever I work on items that have to do  
25 with Mark, his -- as being the vice-president of the

1 company, his -- his authority would be as Rick  
2 Vanhorn's over mine, you know. Even though I don't  
3 work for him and I'm not assigned to him, his  
4 authority would be as my -- as a supervisor in that  
5 aspect of when I work for him. It's a very informal  
6 structure, and no one there's ever actually said that,  
7 you know, that I think that I can think of.

8 Q. Can you think of some examples of areas of  
9 work you do that you might be working with Mark  
10 Pelizza on?

11 A. Yes. Whenever I work on this disposal well  
12 information stuff, having to do with this permitting,  
13 worked with him on the disposal -- the disposal well,  
14 the WDW-250 in Rosita, we worked together, close  
15 together during that time period. And wherever we had  
16 common -- common ground, that I would be working with  
17 him and for him.

18 Q. And would that be working on a permit for  
19 those things, for those wells, the permits?

20 A. I would just be working on permits anytime  
21 he asked me to -- to do some work for him or do some  
22 calculations for him, yes.

23 Q. Is part of your job to supervise or  
24 actually pump wastes into the deep injection wells?

25 A. I truly think that even though I may have



1 authority in an informal sense over lots of people and  
2 other engineers at the other plant, I don't actually  
3 supervise them. And Rick Vanhorn, I think, has the  
4 direct supervision link to all the engineers.

5 Q. At Kingsville Dome, with regard to disposal  
6 well 248, do you supervise or actually manage the  
7 input of waste into that well on a day-to-day basis?

8 A. No, I'm an advisor. In other words, the  
9 plant superintendent, who may not know what I know  
10 about the well and doesn't due to his experience in  
11 the shorter time he's been with the company, would  
12 come to me first if he had any question about the  
13 disposal well.

14 Q. Okay. And when you're working with Mr.  
15 Pelizza on issues regarding deep injection disposal  
16 wells, does that relate to the actual stream of  
17 material that might be going down the well at any  
18 time?

19 A. If he were to ask me to take a sample and  
20 have it analyzed, that would be true. So other than  
21 that, I wouldn't know what you'd be referring to.

22 Q. Do you normally do the sampling of the  
23 waste stream at waste disposal well 248?

24 A. No, that's the plant's responsibility.

25 Q. Are you employed at the plant?

1           A.       No. I'm employed in an adjacent building  
2 in the engineering department. We have -- informally  
3 it's the engineering department, and then the plant  
4 who's supervised by an engineer, but with Rick Vanhorn  
5 over both. And we work -- we're a small enough  
6 company and so close knit, that talking about that  
7 kind of structure is almost difficult because we all  
8 just work together and no one thinks about who's  
9 supervising the other.

10          Q.       So would you have a nonengineering field  
11 guy kind of going out to actually do the injection and  
12 the sampling at the injection well?

13          A.       All manipulation of the disposal well would  
14 be either done by the plant superintendent himself or  
15 his employees, and so they would turn it on and turn  
16 it off. If I had particular advice as to a method how  
17 they should do it more safely, I would let them know  
18 that. Such as, you know, don't bring the disposal  
19 well on more than 25 gallons a minutes for the first  
20 couple of minutes, and then -- because I know it  
21 reacts poorly to it or something like that I would  
22 have advice on. But they do all the manipulation of  
23 the well and all the sampling.

24          Q.       And are the folks that do the manipulation  
25 and the sampling working from standard operating

1 procedures?

2 A. Yes, always.

3 Q. And those are printed and maintained at  
4 URI?

5 A. That's correct.

6 Q. Did you have any role in preparing those?

7 A. No, I did not.

8 Q. So when you came to URI, those already  
9 existed?

10 A. They already existed and have been updated  
11 and maintained, I believe, by Mark.

12 Q. Do you have any role in the updates to the  
13 standard operating procedures for well 248?

14 A. I don't recall right now, but I know Mark  
15 often sends operating procedures to me and asks me  
16 what do I think, is there anything that I think that  
17 should be changed or left out or added to it. And so  
18 that's happened in the past.

19 Q. And sometimes your input is used for  
20 standard operating procedures that govern waste  
21 disposal well 248?

22 A. I don't recall for sure whether he's asked  
23 me about 248 or not, but it happens every once in a  
24 while at various things.

25 Q. And it's your responsibility to create the

1 annual operating reports for WDW-248 each year?

2 A. I think it's probably up to Rick to decide  
3 what we do with that. Most of them were, as described  
4 in -- in -- in my prefile testimony, was -- were --  
5 the annual reports were written by me. I know that  
6 while I was gone, they had the consultants doing them.  
7 I was thinking just recently that in the future I'm  
8 more likely, will probably, as busy as I am, defer  
9 them to consultants in the future. They take a lot of  
10 time.

11 Q. Is it true that you prepared the annual  
12 operating report for WDW-248 each year from 1988  
13 through 2004?

14 A. Yes, that's true.

15 Q. Okay.

16 A. No, that's not true. Leaving out the years  
17 2000, 2001, 2002 and 2003.

18 Q. Have you reviewed the annual operating  
19 reports for years 2000 through 2003?

20 A. Yes, I have.

21 Q. As part of your job, are you required to be  
22 familiar with what is in those annual operating  
23 reports for those years?

24 A. I would say that would be true.

25 Q. Okay. Are you familiar with -- with big

1 events that may have happened during those years?

2 A. I try to be, yes.

3 Q. And why do you prepare an annual operating  
4 report?

5 A. It's a state requirement. And from what I  
6 can see, they want to have an annual evaluation of  
7 just what's been injected into that well, what  
8 chemically and volumewise. They ask that we do a  
9 falloff test to -- and I don't know how important this  
10 is, but to evaluate the permeability, and -- and --  
11 and the falloff test looks into the -- looks into the  
12 reservoir, and since we don't have faults close by,  
13 and we're not looking at faults over and over again  
14 every year, they're too far for us to see in a falloff  
15 test.

16 So I don't know what extra importance  
17 that gives us other than seeing that the permeability  
18 is -- is -- is about what you would expect it to be.  
19 The skin damage calculation is important. I think to  
20 find out how your well is doing as far as damage at  
21 the perforations, it's something you know inherently  
22 anyway just looking at the pressure of the wells is --  
23 has on it for -- in conjunction with the flow rate  
24 that it's handled. And -- but at least doing that  
25 test gives you a number.

1                   But the real purpose behind the well --  
2   the annual report is summarizing all that, but the  
3   real purpose about the work done that year, and we've  
4   always done the MITs until just recently at the same  
5   time, that's the important thing that is done each  
6   year. That is an important thing that's done each  
7   year to -- to determine that the well still has  
8   integrity and that there is no way that the -- that  
9   any fluids are going upwards behind the casing to any  
10  of the shallower zones.

11           Q.     And MIT, does that stand for mechanical  
12  integrity test?

13           A.     Yes, it does.

14           Q.     Okay. What kind of MITs do you perform on  
15  the deep injection well?

16           A.     You mean describe it?

17           Q.     Yes.

18           A.     There's only -- okay.

19           Q.     Is this one test or many tests?

20           A.     It's really, I guess, two tests. One, you  
21  pressure up on the annulus to up pressure predetermine  
22  and -- and look at the decline -- the declining  
23  pressure and make sure that it does not fall more than  
24  a certain percentage in a certain amount of time.

25           Q.     Okay. Is that what you earlier referred to

1 as a falloff test?

2 A. No, it's not.

3 Q. Okay. Sorry for interrupting you.

4 Continue.

5 A. The second part of the test is a  
6 radioactive tracer survey. Radioactive iodine is  
7 injected in short bursts, in intervals, and into the  
8 tubing while the well is flowing. And the first part  
9 of that test, we -- they will log through it several  
10 times, three or four times, to follow that radioactive  
11 source, that radioactive iodine, down into the well  
12 bore and watch it go into the perforations.

13 After they do that a couple of times,  
14 we set our tool -- our logging -- gamma ray logging  
15 tool at the packer, and inject some more iodine and  
16 let it go down past the packer, and then watch for  
17 interval time to make sure that it does not pass by us  
18 again, which means that it's going up outside the  
19 casing.

20 And so those -- those two tests, with  
21 the first test that I was talking about, really,  
22 conclusively prove that we don't have any outside  
23 communication in that well bore. So for one more  
24 year, we've shown that we have integrity.

25 Q. And in that test, you're trying to

1 determine that you don't have -- the well bore, you  
2 mean that you don't have communication between the  
3 casing and well bore?

4 A. Yes. That we don't have any conduit for  
5 flow up the outside of the casing. And it also proves  
6 that we don't have any leak between the annulus and  
7 the tubing, which really is proven all through the  
8 year because the annulus is a closed system, and if  
9 you have a leak there, you're going to have to  
10 continually add some fluid to it. You would know it  
11 long before that little short test that we do.

12 Q. How often do you do the two tests that are  
13 in MIT that you just described? The pressure annulus  
14 and that radioactive tracer survey?

15 A. Once a year.

16 Q. Once a year. And you include the results  
17 in summary fashion into your annual operating report  
18 for the well?

19 A. That's correct.

20 Q. And to whom do you send your annual  
21 operating report?

22 A. We send it to the State. Right now, I'm  
23 sending it Mike Buckley in the Corpus Christi  
24 office.

25 Q. Of TCEQ?



1           A.       TCEQ.

2           Q.       Okay. Does Mike Buckley, as standard  
3 protocol, respond to your annual operating report?

4           A.       Yes. We will get a letter saying that --  
5 that as of this time, they see no problems with it and  
6 have received it and accepted it. But that doesn't  
7 preclude any future comments that they have or  
8 problems they might have with it.

9           Q.       While you've been preparing the annual  
10 operating reports, has it ever been unacceptable to  
11 the State, required corrections or further work after  
12 you submitted it?

13          A.       Not that I recall.

14          Q.       Okay. Who at URI is in charge of reporting  
15 any problems with WDW-248 to the State if there should  
16 be such a problem with WDW-248?

17          A.       Repeat that again. Who at URI?

18          Q.       Yeah. If there were a problem with WDW-248  
19 that by regulation had to be reported to the State  
20 agencies, who would do the reporting? Would that be  
21 you?

22          A.       I would work through Mark on that. You  
23 know, I think, officially, he would be the one that  
24 reports it, but I would work through him and might  
25 deal directly with the TCEQ, but it would be through

1 him.

2 Q. Would any problems with WDW-248 also be  
3 included in the annual operating report?

4 A. Yes, if we had problems with it.

5 Q. So as a matter of course, you summarize  
6 your MIT test in the annual report, and also any --  
7 any compliances or mechanical problems with WDW-248?

8 A. Yes, that would be correct.

9 Q. Okay. What is a falloff test? How often  
10 is that done?

11 A. That's the --

12 MR. HILL: Objection. Two questions.

13 BY MS. OBERLIN:

14 Q. What is a falloff test?

15 A. A falloff test is a test where timewise you  
16 inject a certain amount of time into the well. If the  
17 well has been on for months, that's -- that's the time  
18 which you could inject for as little as 24 hours at a  
19 constant rate. You rig up the wireline unit on it,  
20 run it to the bottom of the hole while you're  
21 injecting is the procedure that's been used.

22 You monitor the pressure for an hour or  
23 so to see if the bottom hole pressure is stable and  
24 sure it's steady state conditions. And then you shut  
25 in the well and watch the falloff of that bottom hole

1 pressure rise that you were experiencing because  
2 you've been injecting into it. And from that, and  
3 looking at the slope of that line and how the slope  
4 backs, you can determine the permeability and the skin  
5 damage of the -- of the well.

6 Q. How often is the falloff test done on  
7 WDW-248?

8 A. It's done once a year with that MIT at the  
9 same time.

10 Q. And the data is also included in the annual  
11 report?

12 A. It's included in the annual report, and if  
13 it's done at a separate time of from when the annual  
14 report's submitted, it will be submitted then as  
15 well.

16 Q. Does WDW-248 always operate, or is it, you  
17 know, you shut it off at night and you open it up in  
18 the morning or some other schedule of turning it on  
19 and off?

20 A. It is a continuous operation.

21 Q. Okay. How often are injections made into  
22 the WDW-248?

23 A. Annually.

24 Q. You mean 24 hours a day, seven days a  
25 week?

1 A. That's correct.

2 Q. Fluid is being pumped into WDW-248?

3 A. That's our desire, yes, that it be on at  
4 all times.

5 Q. What happens at times when you're doing  
6 falloff tests or other types of MIT tests and you  
7 can't inject waste streams into the well?

8 A. Yes. That's what the ponds are for, to  
9 handle the surge and the excesses that might  
10 temporarily exist.

11 Q. What's the longest time that you're aware  
12 of that WDW-248 was unable to handle its normal waste  
13 stream due to being shut down for mechanical problems  
14 or shut down for testing or any other reason to not be  
15 handling waste streams?

16 A. Since you asked that, I'm aware of and --  
17 and just thinking of it right now, I can't imagine --  
18 I can't remember any time that it's been off for more  
19 than two weeks. And that happened recently when the  
20 pump -- when the pump went bad and -- and required a  
21 complete rebuild, and it took that long to get the  
22 pump taken care of. There may be others, but that's  
23 the only one I can remember.

24 Q. When did that two-week period occur?

25 A. I believe it occurred in the last two weeks

1 of April, and I think by the 2nd of May we had the  
2 well back on.

3 Q. And you mean April of 2005?

4 A. Of 2005.

5 Q. Okay. Did you take your normal waste  
6 streams to another deep injection well during that  
7 time?

8 A. For, I think, about a day. Oh, no. Uh-uh.  
9 It went to the pond. But I think for about day and a  
10 half it went to the pond, and then we went ahead and  
11 shut down the reverse osmosis unit. Had to have it  
12 down as well since there was no more extra storage  
13 capacity.

14 Q. And the reverse osmosis unit that you shut  
15 down was servicing which production areas?

16 A. It was primarily servicing PAA2, although  
17 we had bleed from PAA3 and bleed from PAA1 that were  
18 going to it.

19 Q. So when you shut down the RO at that time,  
20 did you shut down the bleed at PAA3 also?

21 A. I believe it did.

22 Q. Do you know for how long the bleed was shut  
23 down at PAA3 in April of 2005?

24 A. That would be about two weeks.

25 Q. Did shutting down for that two-week period

1 in April of 2005 have any consequences for your  
2 restoration schedule?

3 A. It would delay it two weeks.

4 Q. Did it cause you to fail to meet the  
5 minimum requirements for restoration during the  
6 quarter that April fell into in 2005?

7 A. I think we -- just from memory, I think we  
8 were about 4.6 million gallons behind that month  
9 because of that.

10 Q. Is that considered a violation as far as  
11 the State agency is concerned?

12 A. You would have to ask Mark that. I know  
13 that the previous quarter, I believe we were over 6  
14 million over, and the quarter after, we were 6 million  
15 or so over. So whether they consider that a  
16 violation, I don't know.

17 Q. Okay. And what's the capacity of WDW-248  
18 in a gallon per minute description?

19 A. It's able to main -- it's able to reach its  
20 200-gallon a minute average flow rate that -- that  
21 TCEQ allows us. And so there are times when it --  
22 when it plugs off enough that -- that we may be only  
23 be able to get 170 in, and if that's all we need, we  
24 don't worry about it. But if we want more, all we  
25 have to do is either jet with a coil tubing unit or

1 backflow it. It will backflow on its own, and  
2 that's worked very well too, so...

3 Q. Again. I'm sorry. You said --

4 A. It's a capable well.

5 Q. If its capacity goes down, then you have  
6 methods to bring its capacity back up?

7 A. Yes.

8 Q. Okay. And in your annual report, do you  
9 note how many millions of gallons of waste stream the  
10 well has received during the year?

11 A. Yes, I do.

12 Q. And do you recall how many millions of  
13 gallons WDW-248 received in 2004?

14 A. Not -- not completely, but I would -- you  
15 know, I could look it up. It's right here. But it's  
16 taking about 6 million gallons a month. And so it's  
17 about 50 -- 40 to 50 million gallons a year is what  
18 it's taking.

19 Q. Would it take you more than, say, two  
20 minutes to look up how much it actually took in  
21 2004?

22 A. No, it wouldn't.

23 Q. Great.

24 A. It injected 64.7 million gallons.

25 Q. Does the receiving aquifer for WDW-248 have

1 a capacity limit?

2 A. No, it does not. Well, it's not -- nothing  
3 in the range of what we're discussing it would not  
4 have. The more you inject, the more pressure effects  
5 you see in the well. And we have -- we, at the TCEQ,  
6 have set upon ourselves certain limits which keep us  
7 to that limit of 200 gallons a minute, but they're all  
8 artificial.

9 I wouldn't know how much it could take,  
10 but I'm sure it would be over a thousand gallons a  
11 minute if you were just to inject into it and -- and  
12 try to -- my estimate may have been high. But four or  
13 500 gallons a minute and injected to it without  
14 fracturing it. And then once you fracture it, then  
15 you can take more or so if you agree that that's not a  
16 problem. It will take a lot more than what we're  
17 putting to it.

18 Q. If you fractured it, would you -- you would  
19 not have the certainty, though, that the wastes were  
20 being received?

21 A. You could, and there's been a lot of talk  
22 in the past about why it is that we're not safely  
23 fracing these wells to get past any damage we have  
24 close by. You would have to frac it with -- with sand  
25 that was tagged radioactively to where you could see



1 it for several days. You know, just like that  
2 radioactive iodine we inject into it.

3 You tag that, you would -- if you had  
4 the right prescription as far as enough clay above you  
5 and to where you have enough separation between the  
6 zone above you and you design the fracs up right, you  
7 would -- there's no reason that you could frac it and  
8 keep your -- and still pass all the tests that you  
9 have each year, so -- and there's no migration of  
10 fluid of the well bore, so...

11 It has not been thought through the  
12 agencies to -- to ever do one, and that's the only  
13 reason.

14 Q. So has WDW-248 ever been fraced?

15 A. Oh, no.

16 Q. So to the best of your knowledge, has no  
17 fractures in the side?

18 A. To the best of my knowledge, no one's ever  
19 gotten a permit to do that, and no, we don't have any  
20 fractures.

21 Q. And do you see -- do you foresee any time  
22 where you will no longer be able to inject into  
23 WDW-248 because the receiving aquifer doesn't have any  
24 room for the waste that you're injecting?

25 A. No.

1 Q. So at present, you plan -- URI plans to use  
2 WDW-248 in perpetuity for disposal?

3 A. It could be. I don't -- I won't speak for  
4 URI's plans to use it forever. But the pressure  
5 bleeds off whenever we have injected in the past  
6 lesser amounts during the year than we do at the  
7 maximum rate. The pressure drops back down to near  
8 original.

9 Our bottom hole pressure rise at the  
10 end of the last year was around, the end of the last  
11 test around 240 psi above original. It might drop  
12 down to 100 psi above original just from injecting  
13 less one year. It's -- it acts as an infinite  
14 reservoir because it's open on both ends. And it's  
15 open on the outcrop side and it's open on the other  
16 end. And so the pressure bleeds off and -- and  
17 there's no reason that you would have a life of the  
18 well having to do with the reservoir with the rates  
19 they were talking about.

20 Q. So at some outcrop point far away from the  
21 injection well site, do you push fluid out due to the  
22 injection of fluid at the waste disposal site?

23 A. No.

24 Q. Okay.

25 A. But it all compresses, and -- and it is

1 open on both ends and -- but you're not pushing fluid  
2 out at an outcrop.

3 Q. Okay. And WDW-247 is not yet drilled,  
4 correct?

5 A. That's correct.

6 Q. And is it your understanding that that's a  
7 -- that WDW-247 is permitted as a backup well?

8 A. It is.

9 Q. Do you have any intention of drilling  
10 WDW-247 in the foreseeable future?

11 A. So far the well has not given us any reason  
12 to -- to -- to be asking me to work up fresh cost  
13 estimates for how much it would cost to drill the --  
14 the other well, so that's all I can say.

15 Q. And you said you started your work at URI  
16 just right before WDW-248 was drilled, correct?

17 A. In 1988, November 18th of 1988.

18 Q. That's when it -- drilling began or when --

19 A. That's when I started work.

20 Q. And drilling began shortly after WDW-248?

21 A. I think they started in the first week of  
22 December.

23 Q. How long did it take to complete WDW-248  
24 once drilling began?

25 A. It was over, I guess, before the end of the

1 year, but I don't ever recall how many days the total  
2 process took. The drilling, itself, may have taken  
3 only four or five days, but then it probably took two  
4 weeks to -- to complete the -- to do the completion  
5 process and test the zones and swab them in and do the  
6 perforating.

7 Q. Did you have any role in helping to work up  
8 the permit, the application for permit to drill  
9 WDW-248?

10 A. It's so long ago, it's hard to remember  
11 what I was, you know, consulted all the way through  
12 that work. I think that back in the year 2000, there  
13 was a section on completing the well, submitting the  
14 well that needed some clarification. And I remember  
15 seeing the other day in my office some paperwork that  
16 I had -- and I didn't -- I had forgotten about it  
17 until I saw it. That I had fixed -- made some changes  
18 to it, and -- and the note there said, you know, these  
19 pages will be resubmitted as pages, et cetera, et  
20 cetera.

21 And so I was involved in it, and I was  
22 involved in talking to -- to the consultants that we  
23 had doing the work in '97, and feeding them  
24 information all the way through at that time, and  
25 getting them -- giving them the information they

1 needed to -- to -- for familiarizing themselves with  
2 the well. All the production information, what's  
3 happened to the well, everything that they needed in  
4 order to -- to do the -- to do the report for -- to do  
5 the application.

6 Q. Okay. And just to be clear, that was the  
7 application for the renewal --

8 A. Yeah, for the renewal.

9 Q. -- permit?

10 A. For the renewal, yes.

11 Q. Did you have any role in working up the  
12 application for the original permit to drill WDW-248,  
13 which was drilled in 1988?

14 A. No, I did not.

15 Q. Okay. Do you know when the original  
16 application for permit for WDW-247 was put together?

17 A. At the same time as 248.

18 Q. And so you did not work on that original  
19 permit either?

20 A. No, I did not.

21 Q. Did you have a role like you did for  
22 WDW-248's renewal application with regards to WDW-247?

23 A. They were done at the same time, identical.

24 Q. And who did you say did the -- which  
25 consultants did the application for renewal of the

1 injection wells?

2 A. Let me look and see. ECO Service, LLC.

3 Q. Do you know if ECO Services, LLC is still  
4 in business today?

5 A. I understand they're not.

6 Q. They're not?

7 A. Uh-uh.

8 Q. Do you know why?

9 A. No, I do not.

10 Q. Do you know which particular personnel at  
11 ECO Services, LLC worked on the renewal applications  
12 for WDW-248 and 247?

13 A. They had several engineers. The one that I  
14 talked to the most was with Wesley Smith. He's the  
15 one that put his PE stamp on it.

16 Q. Do you know if Mr. Wesley Smith is still  
17 employed as an engineer in the state of Texas?

18 A. No, I do not.

19 Q. When was the last time you spoke with  
20 Mr. Smith?

21 A. Probably in the year 2000 right before I  
22 left, but it might have been earlier. I just don't  
23 recall.

24 Q. And do you recall whether or not the  
25 application for renewal of the deep injection wells

1 was sealed by an engineer at ECO Service, LLC?

2 A. The reason I mention Wesley Smith was  
3 because I saw -- you know, I thought I remember seeing  
4 his seal in there on some particular part of it. In  
5 fact, what it was, it was the as-built construction --  
6 no, the -- it was the construction plans. I noticed  
7 his seal was on that.

8 Q. But you don't know where Mr. Smith is  
9 currently employed?

10 A. No, I do not.

11 Q. He's no longer doing work for URI?

12 A. He -- no. He was a consultant back then,  
13 and he's no longer working for us, no.

14 Q. Did you work at all in the technical  
15 reports that support the application for renewal,  
16 WDW-247 and 248?

17 A. Which technical reports? I guess I don't  
18 understand.

19 Q. Well, for example, if you'll turn to Page 8  
20 of 9 of your direct testimony, you mention Chapters 9  
21 through 11 of the technical reports supporting the  
22 renewal applications for WDW-247 and WDW-248. Did you  
23 work on those technical reports?

24 A. Let me look at where you're talking about  
25 first. Page?

1 Q. Eight.

2 A. Okay.

3 Q. And I'm looking at line -- lines 14 through  
4 16, and you mention just after the Roman numeral XXIV  
5 on line 14, Chapters 9 through 11?

6 A. Oh, I see. Hold on a second. Yes. I just  
7 looked at each of the three again just to refresh my  
8 memory on what parts I had in it, and yes, I did.

9 Q. You did have a role in it?

10 A. Yes.

11 Q. Were you in charge of putting together  
12 those technical reports?

13 A. Mark was in charge ultimately. I consulted  
14 with the consultants, and I don't remember what --  
15 right now what consulting I had with Mark through  
16 that, but I know he would be intimately involved with  
17 that. But I worked more, as I recall, with the  
18 consultants on that as they were asking me questions  
19 on it.

20 Q. But ultimately, the consultants put  
21 together those chapters of the technical report with  
22 your input?

23 A. I don't know what -- what was done as far  
24 as Mark putting it together. Mark may have put it all  
25 together with them working with me as well. I don't



1 recall.

2 Q. And would Wesley Smith have also helped in  
3 working on those particular technical reports?

4 A. He may have delegated a lot of that. I --  
5 you know, I don't recall what part he had in it, but  
6 he was the main contact on that.

7 Q. Did you ever learn much about Mr. Smith's  
8 professional qualifications such as how long he had  
9 been with ECO, LLC?

10 A. He -- he made me familiar with his story  
11 back then. I don't -- I haven't seen him or thought  
12 about him in so long that you wouldn't be able to ask  
13 me how many years he'd been with them, and -- but at  
14 that time, he was -- at that time, I considered him a  
15 friend, and I just have lost track of him.

16 Q. Was he a senior geologist at that time or  
17 was he considered newer in the industry?

18 A. No, he was senior. He was near  
19 retirement.

20 Q. Okay. Do you recall where he was  
21 educated?

22 A. No, I do not.

23 Q. Do you recall what degrees he held?

24 A. No, I do not.

25 Q. Do you know if he had a master's or a

1     doctorate degree?

2           A.     These questions -- when I say no, I did  
3     not -- I, really, back then may have, I just don't  
4     recall anymore.

5           Q.     Did you ever refer to him as Dr. Smith?

6           A.     I don't think so.

7           Q.     Do you recall if he lived in Texas or  
8     worked --

9           A.     At that time he lived in Texas, yes.

10          Q.     And do you know if he ever worked in any  
11     other state besides Texas?

12          A.     I'm sure he did, but I just don't have any  
13     information on it. I just don't remember at this  
14     point.

15          Q.     Okay.

16          A.     I would bet that I could find in my office  
17     his resume and refresh my memory, you know, as I look  
18     at that because we talked quite a bit about his -- at  
19     that time we talked a lot about his -- his life, his  
20     background, his kids and stuff like that. I just  
21     don't recall anymore. I'm poor on that.

22          Q.     And you said you were a professional  
23     engineer, correct?

24          A.     Yes.

25          Q.     And are professional engineers governed by

1 code of ethics?

2 A. Yes, they are.

3 Q. And under your code of ethics, what does it  
4 mean if you seal a document?

5 A. It means that you have personal knowledge  
6 and -- of -- and -- and supervision of what is in  
7 that -- what information is in that document. And  
8 that you are sealing it, proving it due to that  
9 personal knowledge that you have of it and supervision  
10 of it.

11 Q. When you -- when a professional engineer  
12 seals a document, is he also attesting that the  
13 information in the document is true?

14 A. And correct.

15 Q. True and correct. I'm sorry?

16 A. I...

17 Q. I didn't hear what your response to my  
18 question was. If you'll --

19 A. I have not -- yeah, I have not answered. I  
20 was -- on there, on your -- below your seal is, this  
21 is true and correct to the best of my knowledge,  
22 yes.

23 Q. Okay. Do you also seal that the  
24 engineering work that's done and recorded in the  
25 document is done in accordance with the standards of

1 the profession?

2 A. Yes.

3 Q. With regard to the applications for WDW-247  
4 and 248 renewal, would you feel comfortable personally  
5 sealing these applications?

6 A. I really can't say. I mean, I haven't even  
7 thought about that, so...

8 Q. So if someone asked you right now to put  
9 your stamp on these particular renewal applications,  
10 you wouldn't be comfortable doing that now?

11 A. I wouldn't say that. I probably -- I feel  
12 not only comfortable, but would -- I feel intimately  
13 knowledgeable above everything that -- everything  
14 that's in this -- this book. And I say intimately, I  
15 feel that I have as much or more knowledge on it than  
16 anybody would. And so I feel very comfortable with  
17 everything that's in there as far as this well being a  
18 perfect candidate for a renewal. And on that basis,  
19 of course, I would immediately say, this is the  
20 perfect well that I would put my reputation behind it.

21 Q. But would --

22 A. But this -- this is -- this is -- I can see  
23 from previous work that -- previous conversations that  
24 you've had asking Mark, obviously, is an area of  
25 contention, and so I would want to stand back and read

1 the rules again and find out exactly how I would be --  
2 what I'm really saying when I answer your question on  
3 that. But I am very confident in everything that's in  
4 there.

5 Q. So when you say that you're very confident  
6 of what's in there, is that based on the review of  
7 what is actually in there, or are you basing that more  
8 on your general knowledge of WDW-248?

9 A. No. No. I'm basing it on looking through  
10 it and being intimately familiar with -- I guess I  
11 wouldn't say I'm intimately familiar that much with  
12 the geology end of it. Although, I am in that, too.  
13 I'm the one that, you know, I've done the simulation  
14 and had the faults in there and -- and simulated that.

15 And so the geology, itself, is  
16 something that -- that I would wonder how a geologist  
17 would have more -- he has a better understanding of  
18 things than I do because of his education. But I feel  
19 like I'm intimately familiar with everything that's in  
20 there and with the well bore. So...

21 Q. So you -- it is your testimony that you're  
22 familiar with the material that is presented in these  
23 renewal applications?

24 A. Yes.

25 Q. Okay. Did you hear Mr. Pelizza testify

1 that in all the years of its service, WDW-248 has  
2 operated without problem or without issue, I think?

3 A. I would agree with that, yeah. It's the --  
4 the well bore itself is -- and it's got qualified deal  
5 because anytime you have any problem, it has to be  
6 called a problem whether it be the pump go down or  
7 the -- we had a -- a -- a seal a leak in the tubing  
8 and we had to replace those seals back in 1992, I  
9 believe. We've got information on that. I know Mark  
10 maybe made copies of it for everyone.

11 So those would be -- you might want to  
12 consider those problems, you might not. The well bore  
13 in the formation has never given us any problem.  
14 It's been a stellar performer.

15 Q. Is it true that in 1996, the injectivity of  
16 the well had dropped and caused a loss of well  
17 efficiency?

18 A. The efficiency of the well goes up and down  
19 as depending on whether we jet it back and -- and what  
20 happens is is that there's always some solids getting  
21 through the filters, and every once in a while you  
22 just have to back flush it and clean them back up  
23 again.

24 And so you -- we have a limit of 200  
25 gallons a minute into the well. If we only need 170

1 of that to take care of what we need to take care of,  
2 then -- then we will wait until we get down below 170  
3 before we jet the well back or take some remedial  
4 action, and...

5 Q. And would an example of remedial action be  
6 to oxidize the well with 600 gallons of 31 percent  
7 hydrochloric acid?

8 A. We tried that once, and acid works  
9 extremely well at our Rosita project on the WDW-250,  
10 and jetting it back didn't seem to do much on that  
11 well. And so acid is the medium of choice for helping  
12 that well out. And certainly, seems that acid did not  
13 work effectively -- cost effectively on the disposal  
14 well at Kingsville. And what that indicates is  
15 that -- that the solids that we have at Kingsville are  
16 not acid soluble. It is not a carbonate precipitation  
17 that's happening, that it is actually solids getting  
18 through the filter that are not acid soluble, and you  
19 just have to actually flush them back.

20 Q. Do you recall in November of 1997 treating  
21 the well with a 2,000 gallon acid job with salt --  
22 rock salt diverter designed by Halliburton Well  
23 Services?

24 A. Yes, and -- yes, I did.

25 Q. And was that effective in...

1           A.       All of the acid jobs were effective, but I  
2       don't call them cost effective. I think it cost way  
3       too much money for the benefit that we got.

4           Q.       So you prefer the jetting method?

5           A.       Yes.

6           Q.       And what does that method involve?

7           A.       It involves rigging up a coil tubing unit.  
8       That's -- that's a unit with a pipe on it that's on a  
9       coil, and you can run in under pressure and inject  
10      nitrogen and lift -- and by injecting nitrogen, you  
11      lighten the head on that well bore making the well  
12      bore want to flow that stronger than it would if you  
13      just opened it up.

14                   The well bore has a natural pressure on  
15      it now -- or a pressure on it now when you shut it in  
16      at around 180 psi. And so it will flow back on its  
17      own, and it will start off at 50 gallons a minute and  
18      then flow down to 20 gallons a minute or 15 over time  
19      if you flow it back over a 24-hour period.

20                   But by using a coil tubing unit and  
21      lightening the fluid head on that well, you can flow  
22      back probably 80 gallons a minute continually. And  
23      flow back off those solid -- flow back the solids off  
24      of the formation phase quicker and faster, and it  
25      costs about the same as that acid job did, and yet, it



1 was more much effective.

2 Q. How many acid jobs did you give the well?

3 A. I would have to go back and just look. I  
4 think that this well, the only real official acid job  
5 was the one you talked about were the rock salt. The  
6 other acid jobs were -- that's where we called in a  
7 real service company, and -- and the rest of the acid  
8 jobs which might have been two of them, I don't recall  
9 right now, were just where we used acid on hand, if  
10 I'm remembering correctly, and acidized it ourselves.

11 Q. Okay. And how many nitrogen jetting  
12 operations?

13 A. I haven't counted them, but I would think  
14 there would probably have been about four.

15 Q. And you were not present at URI in 2003?

16 A. That's correct.

17 Q. Are you aware that in May 2003, the TCEQ  
18 staff did an unannounced investigation and found that  
19 WDW-248 was not operational at that time?

20 A. I never heard anything expressed like that,  
21 no.

22 Q. Okay. Do you know any of the details about  
23 that particular investigation?

24 A. No, I do not.

25 Q. Would it surprise you if you read an agency

1 document that noted that WDW-248 were shut down during  
2 that time?

3 A. Shut down in the sense that they weren't  
4 injecting and -- what -- what do you mean by "shut  
5 down"? Did someone shut it down? Is that what you're  
6 saying or what?

7 Q. Well, do you recall any information in the  
8 annual operation report for WDW-248 about an  
9 unannounced site visit from TCEQ in June of 2003?

10 A. I don't recall that, no.

11 Q. Okay. And the longest time you're aware of  
12 the well not running is for two weeks earlier in 2005,  
13 correct?

14 A. You know, when I made that statement, I was  
15 talking about the time that I was there, and so I do  
16 realize now that -- that I'm not aware of -- I am  
17 aware, but it's something that was out of my memory  
18 when I was talking because I know that we only ran  
19 the -- I was talking to Rick Vanhorn about the  
20 operations while I was gone, and we only ran a couple  
21 of days a month.

22 I was remembering and telling me, Bob,  
23 during the time when they were inactive, they --  
24 all -- all they'd do at that time was -- was provide  
25 enough bleed to the well fields to control migration

1 of the fluids because they didn't have operations --  
2 active operations and restoration. And so I would  
3 have to say that I wasn't here a while ago during that  
4 time period when they didn't have any active  
5 operations, and all they needed to do was bleed the  
6 control migration of fluids.

7 It's only a small amount of fluid. You  
8 wouldn't need to produce that well or inject in that  
9 well full-time in order to handle that situation. So  
10 I would be in error on that part.

11 Q. Okay. Well, with regard to the actual  
12 waste that are put in waste disposal well 248, you  
13 have some waste that are generated through the  
14 restoration process; is that correct?

15 A. From the RO, yes.

16 Q. Okay. Do you have some wastes that are  
17 generated separately from the mining operations?

18 A. When we're mining, it's -- yes, we do.

19 Q. Okay. And WDW-248 serves all of Kingsville  
20 Dome, correct?

21 A. Yes, it does.

22 Q. Okay. So it handles the waste from any  
23 restoration anywhere in Kingsville Dome?

24 A. Uh-hum.

25 Q. And also any waste from mining operations

1 at Kingsville Dome?

2 A. That's correct.

3 Q. Okay. Now, can you give me an idea of how  
4 much of the waste that goes into the well is from  
5 restoration versus how much of the waste -- well, wait  
6 a second. Withdraw the question.

7 Are there any other sources of waste  
8 that are injected into WDW-248 at Kingsville Dome?

9 A. Not that I'm aware of. It's all either  
10 production or restoration.

11 Q. Okay. And can you give me an idea, however  
12 you'd like to express it, whether it be a fraction or  
13 a percentage, but the amount of waste that go into the  
14 injection well that are from restoration activities  
15 versus the amount that go in from operation  
16 activities?

17 A. Yes. When we're just in operation and we  
18 were at capacity for Kingsville Dome at its peak, we  
19 were at 5,000 gallons a minute total circulation. And  
20 the bleed from that required an -- for the production  
21 end of it would be 50 gallons a minute. So that was  
22 the maximum, and then there would be another 10  
23 gallons a minute just from washing the pad, running  
24 the laboratory in the lab.

25 At side issues, it wouldn't be 10

1 gallons a minute, but there's another small amount  
2 added to that 50, so it would be less than 60 gallons  
3 a minute total. And that's when we were at 5,000  
4 gallons a minute. Right now, we need 160 to 170 to  
5 200 gallons a minute depending on what we're doing in  
6 restoration, and we do not have any production at all.  
7 So we're using up that entire amount.

8           If you had production and restoration  
9 going on at the same time, both of them would be  
10 fighting for that 200 gallons a minute, and they would  
11 be -- it would be about right with 150 gallons a  
12 minute going to restoration activities and 50 gallons  
13 a minute going to production. But you probably  
14 wouldn't run it 5,000 gallons a minute production I  
15 guess. One of them would have to back off a little  
16 bit in capacity. I don't think you could have both of  
17 them at an absolute capacity.

18           And the way we're doing our satellites  
19 now, if we had satellites going in production at  
20 Rosita -- I mean, at Kingsville, they run at a  
21 thousand gallons a minute. And so we would probably  
22 not be running five of them, we'd probably be running  
23 four.

24           Q.       What's a satellite?

25           A.       A well field.

1 Q. Okay.

2 A. And I don't think in your plan that you  
3 ever had us running more than four at one time, did  
4 you? Oh, sorry.

5 THE COURT: Before you continue, why  
6 don't we go off the record for just a second. Note  
7 that it's 10 minutes to six.

8 (Off the record.)

9 THE COURT: Pursuant to an  
10 off-the-record discussion, we will recess for the day  
11 and reconvene tomorrow at nine, at which point we will  
12 take up the balance of the cross-examination and any  
13 redirect of Mr. Grant. Thank you very much. We are  
14 adjourned for the day.

15 (Proceedings closed at 5:53 p.m.)

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1 THE STATE OF TEXAS

2 COUNTY OF NUECES

3 I, Patricia Morales, Certified Shorthand  
4 Reporter in and for the State of Texas, do hereby  
5 certify that the above and foregoing contains a true  
6 and correct transcription of all portions of evidence  
7 and other proceedings requested in writing by counsel  
8 for the parties to be included in this volume of the  
9 Reporter's Record, in the above-styled and numbered  
10 cause, all of which occurred in open court or in  
11 chambers and were reported by me.

12 I further certify that this Reporter's  
13 Record of the proceedings truly and correctly reflects  
14 the exhibits, if any, admitted by the respective  
15 parties.

16 WITNESS MY OFFICIAL HAND THIS THE 12TH DAY OF  
17 AUGUST 2005.

18  
19  
20 -----  
PATRICIA MORALES Texas CSR #4663  
Expiration Date: 12/31/06  
21 Firm Registration Number: 302  
BOSCAMP & ASSOCIATES  
22 111 North Odem, Suite 3  
Sinton, Texas 78387  
23 (361) 364-0600  
24  
25

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